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ROCHESTER, N. Y., U. S. A.

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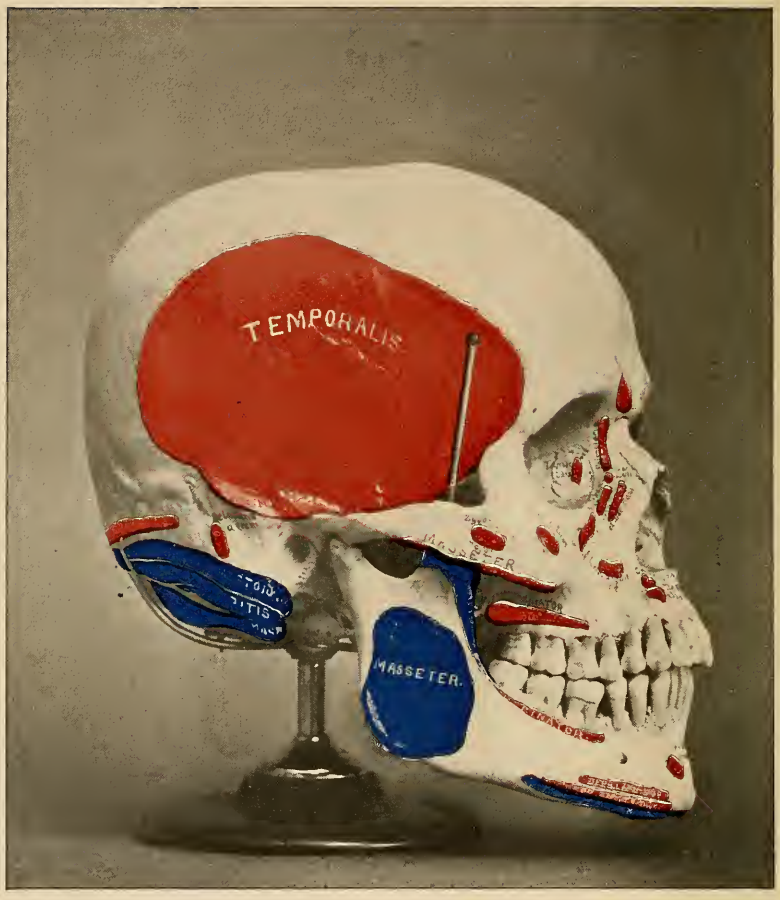

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No. 17, SKULL WITH COLORED MUSCULAR AREAS (See Page 24.)

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ANATOMICAL LABORATORY
OF
CHARLES H. WARD.

MANUFACTURERS AND IMPORTERS OF
ANATOMICAL AND
PHYSIOLOGICAL MODELS

LABORATORY & OFFICE:
387 West Avenue,

PREPARATEURS OF
HUMAN SKELETONS
AND OSTEOLOGICAL PREPARATIONS.

CHARLES H. WARD,
MANAGER.

ROCHESTER, N. Y., June 7, 1906.

Dr. Bennett F. Davenport,

Boston,

Mass.

Dear Doctor:

In compliance with your request of recent date a copy of our catalogue has been mailed to you.

It is doubtless unnecessary to infrom you that we are the only people in this country who deal exclusively in anatomical preparations. With us it is no mere side line, but our entire business.

Our skeletons are mounted in our own laboratory, by men who have made a specialty of this class of work for so many years that they may fairly be designated as "experts."

We have earned a reputation for producing skeletons and bone preparations of the highest obtainable quality. We list several grades, from that designed especially for professional anatomists, (our "extra quality skeleton" is of this grade) to the plain unmounted specimen for the medical student,- all good of their kind, all properly sterilized, degreased and bleached, and all at the lowest prices at which such material can be offered.

The anatomical models described are, with few exceptions, of Europen make; these have been carefully selected from the works of the leading continental manufacturers, and aim to present both the entire manakin and models of individual organs, in various degrees of perfection and with corresponding latitude of cost.

Additional details concerning any of these preparations will be supplied on application.

Trusting that you will favor us with your orders, I remain

Yours very truly,

Charles H. Ward

CATALOGUE OF

HUMAN AND COMPARATIVE

SKELETONS

OSTEOLOGICAL SPECIALTIES AND ANATOMICAL MODELS

204

PREPARED AND IMPORTED BY

CHARLES H. WARD

(Member of the Association of American Anatomists.)

~~45 AND 47 MOUNT HOPE AVENUE~~

ROCHESTER, NEW YORK, U. S. A.

387 West Ave.

Mr. Ward's preparations were awarded the First Prize and Two Special Diplomas at the World's Columbian Exposition, Chicago, 1893. : : :

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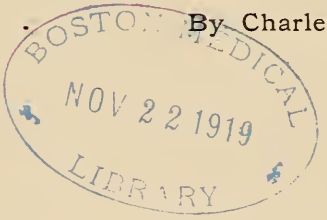

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CONDITIONS TO BE OBSERVED.

HOW TO ORDER.

Parties ordering from this catalogue are desired to specify the preparations wanted both by name and number, and by price, to avoid possible errors. To facilitate this a blank order-form is enclosed.

QUOTATIONS.

This catalogue cancels all former price-lists and quotations.

PRICES.

The prices to all purchasers are net, save on duty-free importations. (See MODELS.)

REMITTANCES.

Money must in every case accompany orders, except from institutions or persons having a financial rating. Remittances are requested by express, or P. O. money order, or N. Y. draft. Local checks should include exchange.

CREDIT.

To institutions, and to parties furnishing satisfactory references, a credit of 30 days is extended.

BILLS DUE.

Bills remaining unpaid at the expiration of 30 days will be subject to sight draft without further notice.

DELIVERY.

The preparations herein listed are delivered, securely packed, to freight or express company at Rochester, N. Y., at prices quoted.

C. O. D.

If desired, goods will be sent C. O. D. on receipt of a sum sufficient to cover express charges to destination and return.

ON APPROVAL.

Owing to the extreme skill required in packing, no goods will be sent on approval.

CARRIER.

Goods are more safely shipped by express. As freight rate on skeletons, models and museum specimens in general, is three times the first-class rate, little saving is effected by freight shipments, except on empty cabinets, glassware, etc.

Address, CHARLES H. WARD, ~~45-47 Mt. Hope Avenue,~~ 387 West Ave.
Rochester, N. Y., U. S. A.

INTRODUCTORY.

The catalogue given herewith contains duplicates of all the specimens that have been furnished to the following institutions:—U. S. National Museum; U. S. Army Medical Museum; Peabody Museum of Archæology and Ethnology; Cambridge Museum of Comparative Zoölogy; Field Columbian Museum; Wistar Institute of Anatomy; Yale University; Yale School of Fine Arts; Harvard Medical School; Lawrence Scientific School; Johns Hopkins University Medical School; Columbia College, Medical Department (College of P. & S.); University of Pennsylvania, Medical Department; Jefferson Medical College; Cornell University, Anatomical Department; Cornell University Medical School; Tufts College Medical and Dental Schools; University of Buffalo, Medical and Dental Departments; University of Texas, Medical Department; University of Tennessee, Medical and Dental Departments; University of Oregon, Medical Department; Williams College; Oberlin College; Colby College; Creighton Medical College; Fort Wayne College of Medicine; Harvey Medical College; Indiana Dental College; Maryville College; Medical College of Indiana; Northwestern University Medical and Dental Schools; Rhinehart School of Sculpture; State University of Iowa, Dental Department; University of Rochester; Rochester Athenæum and Mechanics' Institute; Western Reserve University, Medical Department; Mississippi State Charity Hospital; University of North Carolina, Medical Department; State College of Kentucky; North Pacific Dental College, and many others. To these have been added a large number of new preparations of exceptional interest as will be evidenced in the succeeding pages.

To those who may be unfamiliar with the above, the following communications are given, from many, as a guarantee of the general excellence of the specimens:

NEW YORK STATE DEPARTMENT OF HEALTH,
CANCER LABORATORY, BUFFALO, N. Y.

Dec. 31, 1901.

I have great pleasure in saying that I am well acquainted with Mr. Charles H. Ward, of Rochester, N. Y., and with the establishment of which he is the head.

Mr. Ward has, in time past, done an enormous amount of good work in his particular line, and I have learned to know how thoroughly conversant he is with the entire domain of human and comparative anatomy. With his minute knowledge of the comparative science, he should make a most valuable instructor in this department of medical science, and I gladly urge all who are contemplating study of this kind, to profit by his knowledge and his ability to supply such specimens as may be needed.

I have bought scores of preparations of Mr. Ward, and have always found them just as represented and the best of their kind; in fact, I know of none living who makes a finer preparation than does he, or who has better facilities now for doing this kind of work. Therefore, I cheerfully recommend him to all in need of such services or such preparations as he can supply.

ROSWELL PARK,
Professor of Surgery,
University of Buffalo.

UNITED STATES NATIONAL MUSEUM,
WASHINGTON, D. C.,

March 27, 1902.

Mr. Charles H. Ward,
Rochester, N. Y.

Dear Mr. Ward:—In answer to your inquiry I may say that your skeleton work is the best with which I am acquainted, and as you know, I have had a long experience with osteological work both here and abroad. You have introduced many mechanical improvements in the mounting of skeletons

and your human skeletons with the rubber muscles, showing the action of the bones during the various motions of the body, are admirable for class demonstrations; the same may be said of the skeletons with areas of origin and insertion so colored that they may be distinguished at a glance.
I have simply mentioned these because they are among the most noteworthy of your devices, but "there are others."

Very truly yours,

FREDERIC A. LUCAS,

Curator of the Division of Comparative Anatomy,

U. S. National Museum.

Every osteological specimen listed is mounted under my personal supervision, and is rigidly inspected before shipment. Regarding their quality, the award given my work by the Judges of the World's Columbian Exposition (exhibited as a section of the display from my father's Natural History establishment) is specific:

EXHIBIT

HUMAN OSTEOLOGICAL PREPARATIONS

AWARD.

"For careful and thorough workmanship; elegance, convenience and correctness of arrangement; exact pose and proportion of parts; graphic designation of the various parts; freedom from disagreeable odors and from oxidation of mountings, and special regard paid to the wants of students of anatomy."

A selected list of anatomical models is appended. For models of every description, Human, Comparative and Botanical, busts, and collections illustrating Comparative Odontology and Osteology, etc., address

CHARLES H. WARD,

~~45-47 Mt. Hope Avenue.~~ Rochester, N. Y., U. S. A.

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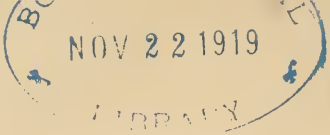


CONCERNING MOUNTED SKELETONS.

EACH SKELETON

Represents a single individual, and the relative development and proportion between the parts is true to nature, (which is not the case with cheap, imported skeletons, composed in many cases of the odds and ends of the dissecting room.)

THE SEX

Is accurately determined, and either sex will be furnished, as desired.

THE BONES

Are perfectly bleached and sterilized and free from grease and odor, strong, well marked and solid.

THE POSITION

Of the assembled skeleton is anatomically correct; it is erect, "well set up," and appears to stand up rather than hang down. Each has a complete coccyx, a hyoid, the principal sesamoids, and actual costal cartilages uniting ribs with sternum.

PRICES

Vary with the whiteness, size and solidity of the bones and perfection of dentition, but the mounting is identical in all grades save the imported (third grade.)

THE MOUNTINGS,

Of polished brass, nickel plated, are carefully designed to admit of natural movements of limbs, including adduction and abduction, pronation and supination of hand, and flexure of elbow and knee, wrist and ankle. Removal of arms, legs, lower legs, hands and skull is provided for; and the skull is horizontally sectioned to permit access to the brain cavity. The nickel plating effectually arrests the oxidation of the mountings so universally observed in skeletons, yet so fatal to the beauty of the preparation. With the nickeled mountings, a soiled skeleton may, by simply washing with soap and water, be restored to its original condition without dismounting.

METHODS OF SUPPORT.

Skeletons are supplied with a suspension ring by which they are hung upon a "crook" standard sold for the purpose, or from a hook, or the bracket of a skeleton cabinet, or are supported by a "clutch" standard. The latter is strongly recommended.

THE CROOK STANDARD,

Is a nickeled steel rod rising from a polished oak base and terminating in a tapered curve with a hook, which receives ring of skeleton. This is a most useful adjunct to the skeleton cabinet, furnishing a temporary support when skeleton is removed from cabinet, for demonstration in class room or amphitheatre.

Price, $8.

THE CLUTCH STANDARD,

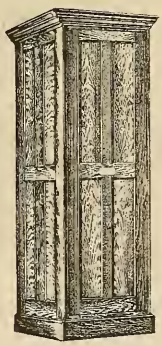
(See views of skeleton, page 13) is a straight steel shaft, springing from a polished oak pedestal, and bearing sleeves secured by set-screws. Clutches on these sleeves grasp the skeleton by the vertebral column. The skeleton can be raised or lowered, is firmly supported and independently portable. The skull is very readily removed.

A skeleton supplied with this standard will outlast one supported from a ring, as greater rigidity is secured by its use, together with a total elimination of oscillation with its damaging clashing together of the fragile bones of the extremities.

Price, $12.

THE SKELETON CABINET,

Is recommended as the only practical safeguard against dust and handling, as well as a convenient method of concealing its occupant from the public gaze. The subject, hanging by its ring from the extension bracket, may be drawn completely out of cabinet for inspection, a steady push serving to return it (see cut on next page). When mounted upon a clutch-standard, pedestal of latter rests upon the floor of case, and the skeleton is lifted in and out by its standard. The cabinet sustains precisely the same relation to its occupant as do the covers to a book.



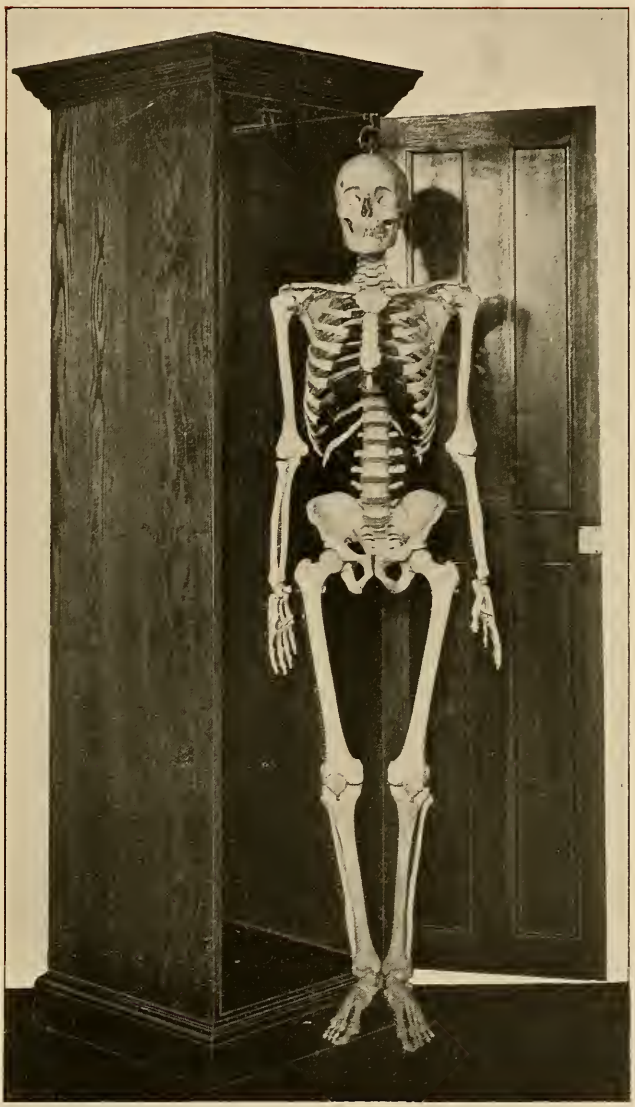
OAK CABINET.

Made of kiln-dried lumber, finished on all sides.
Door closes dust-tight and has flat-key lock with two keys.
In two styles, each with extension bracket :

I Selected oak, paneled door, varnish finish inside and out. Price, boxed, $15.

II Figured quartered oak, paneled all around, polish finish. Price, $25.

Cabinets may be had of wood or style of finish to conform with any interior, at slight additional cost.



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SKELETON SUSPENDED FROM EXTENSION BRACKET

PART I. HUMAN ANATOMY.

MOUNTED SKELETONS.

ADULT HUMAN SKELETON, First Grade.

Male or female, perfectly bleached and sterilized and free from grease or odor. Mountings admit of free movements of limbs, rotation of radius upon ulna, and removal of hands, arms, legs, lower legs, and skull. The skull is horizontally sectioned to allow access to brain cavity. With actual sternal ribs, a hyoid, the principal sesamoids, styloid processes, complete coccyx, etc., etc.

The articulation is anatomically correct. Mountings are of polished brass, nickel plated.

Price, with suspension ring, $50.

Price, with clutch standard, $62.

ADULT HUMAN SKELETON, Second Grade.

As above, with less perfect dentition and not so white, but mounted in precisely the same style. This grade is actually finer than many so-called "first-class" imported skeletons.

Price, with suspension ring, $40.

Price, with clutch standard, $52.

ADULT HUMAN SKELETON, Third Grade.

Either sex. This is the usual imported skeleton of commerce. The mounting is inferior. For those desiring a very cheap mounted skeleton.

Price, with ring, $25 to $35.

SKELETON OF YOUNG CHILD.

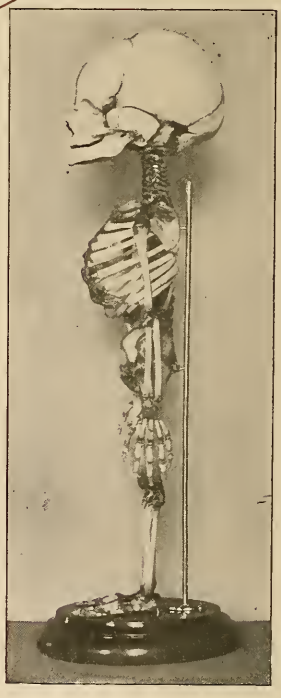
Ligamentary preparation, mounted on polished pedestal, with standard (see cut.)

Price, according to age, $20 to $75.

A number of specimens of known age, sex, and nationality, in stock.

SKELETON OF FŒTUS.

Ligamentary, mounted on standard, with polished pedestal. Of various ages. Price, $10 to $20.



SKELETON OF INFANT.

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SKELETONS SUPPORTED BY CLUTCH STANDARDS

SPECIAL SKELETONS, MOUNTED.

1 **SELECTED ADULT SKELETON, Extra Quality.**

Male or female. A special preparation for Surgeons and Anatomists. Perfect in dentition and development. The phalanges of hands and feet are flexibly articulated, and admit of natural movements. For further particulars see description of "1st grade." This skeleton cannot be supplied in numbers, as it is exceedingly difficult to obtain.

Price, without standard, $72.

Price, with clutch standard, $84.

2 **ONE-HALF OF ADULT SKELETON.**

Of either sex, vertically bisected, showing cranial, thoracic, neural and pelvic cavities, and with one arm and one leg complete.

Price, with suspension ring, $40.

Price, with standard and pedestal, $52.

3 **HALF SKELETON, Without Limbs.**

Mounted on polished oak pedestal with standard. Revolves on vertical axis.

Price, $25.

4 **DISLOCATING SKELETON.**

Limbs articulated by concealed springs to admit of natural luxation of all joints at will. The articular surfaces are continually opposed during movement of the joints; the digits of the hands and feet are flexible and will stay in any desired position, and the various amputations of the foot and ankle may be demonstrated by actual separation of the parts involved. Mounted on clutch standard.

Price, $90.

5 **ADULT LIGAMENTARY SKELETON, of Either Sex.**

Prepared to order only.

Price, $85.

6 **SKELETON, WITH REMOVABLE BONES,**

Of either sex, mounted upon a polished brass standard in such manner that each individual bone (except those of skull), may be removed independently for examination. A preparation embodying the more desirable features of both an articu-

lated and a disarticulate skeleton in one specimen.
Price, to order, $250.
This preparation, original with Mr. Ward, was honored with a Special Diploma at the World's Columbian Exposition.

7 ADULT SKELETON, Mounted with Bones Spaced, (a-la-Beauchéne.)

With supports in burnished brass upon polished oak pedestal. In this preparation all parts, including the smallest and most delicate of the bones, are mounted upon independent supports in such manner that the relations of their internal faces may be perceived at a glance.
Price, to order, $250.

Note. — The great value of this form of mounting, though little known in this country, is fully recognized in Europe, where there is a continual demand for skeletons and skulls, not of man alone, but of all the typical vertrabrates, mounted a-la-Beauchene.

8 SKELETON SHOWING MUSCULAR AREAS of the entire body.

On this skeleton the areas of origin and of insertion of the various muscles are colored respectively red and blue. Upon these colored areas of attachment the names of the muscles are plainly printed in white. Anatomy according to Gray, Holden or Spalteholz, as desired. A good idea of the appearance of this piece may be had from the colored plate (see frontispiece) of a skull so prepared.
Price, to order, mounted on clutch standard, $110.
Same, but with flexible phalanges, price $120.

This preparation, by Mr. Ward, was awarded a special diploma at the World's Columbian Exposition, and has already been supplied to several medical colleges and to the National Museum at Washington.

9 SKELETON WITH ARTIFICIAL MUSCLES, for Dissection.

This preparation was first suggested to Dr. D. A. Sargent, the director of physical culture at Harvard, and subsequently made for him, but in later preparations it has been greatly improved and strengthened. As now made every muscle of the arm and leg, back, breast, shoulder and hip is represented and can be dissected. No anatomical model admits

of the dissecting of one tenth this number of muscles, nor do the removable muscles of models dissect at their origins and insertions as is the case in this preparation. Following is a description:

Upon the right side of the skeleton of a large man are traced the origin and insertion of the principle muscles of the body, the areas of origin indicated by red, of insertion by blue, and the names of the muscles distinctly lettered in white upon the colored areas. Artificial annular and other ligaments are applied wherever practicable. To the left side of the skeleton (upon which the muscular areas are simply outlined in black), are attached by eyelets the corresponding muscles, cut from pure Para sheet rubber, and accurately labeled and colored to represent the form and direction of the muscular striæ, tendinous portions, etc. These muscles not only allow of considerable stretching, thus demonstrating which particular ones are involved in any given movement, but, being attached to their proper origins by eyelets slipping over pins, they may be readily dissected and re-assembled. The individuality of the various layers is by this means more readily demonstrated than upon the actual subject, in which many muscles are so blended as to be hardly distinguishable. Complicated muscles may thus be re-dissected, not once but many times. The building up of the muscular system, from

DETAILS OF HAND AND FOOT.

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No. 9 SKELETON, WITH ARTIFICIAL MUSCLES.

the skeleton outward, may also be practiced, and will be found an invaluable aid in fixing the details of anatomical structure upon the memory.

While in no sense expected to supplant the actual dissection of the cadaver, this preparation is believed to be a practical adjunct to the scalpel.

Price of complete preparation, with standard, ~~$385.~~ 425.

This preparation may be seen in the Army Medical Museum at Washington, at Williams College, and at the Philadelphia Normal School for Girls. Further particulars on application.

9b **HUMAN SKELETON for Demonstration of Movements.**

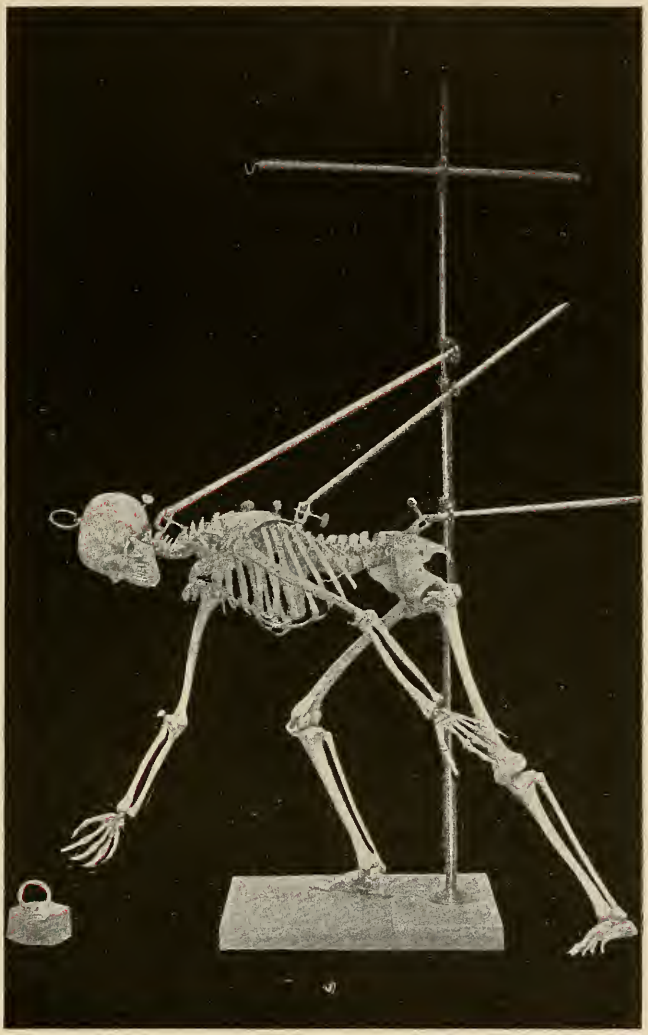
This skeleton, a recent Parisian invention, is supplied throughout with flexible articulations, by means of which, with the aid of special appliances as shown in the engraving, it can be made to assume, and to retain indefinitely, any desired position.

The vertebral column, the scapulæ, the clavicles, the skull, the arms, the hands, the legs, the feet, the digits,—all, in a word, are flexibly articulated and mobile.

The fixation of the body and of the members is obtained with the aid of keys, set-screws, and braces, borne by a supporting standard. The manipulation of this piece is simple and practical. The cut, which is a direct photographic reproduction, gives a general idea of the preparation, and the unique services which it can be made to contribute to the demonstration of human anatomy, both from the scientific point of view (zoology and medicine) and from the artistic standpoint as well.

It is, in fact, the only preparation of the human skeleton that admits of complete posing, and as such must prove invaluable to Schools of Fine Arts.

Price, complete, with pedestal and supports as shown, $300.



SKELETON No. 9B, POSED FOR STUDY

UNMOUNTED SKELETONS.

I DISARTICULATED HUMAN SKELETON.

Adult, of either sex. The bones of one hand, one foot and vertebral column are strung on catgut, permitting their separation and reassemblage at will, the opposite hand and foot remaining unmounted. The skull is horizontally sectioned, the jaws articulated by springs. In elegant quartered oak compartment chest, with tray, drop handles, lock and key. An epitome of the human skeleton showing number and relation of bones, the common variations, etc., occupies inside of cover. Bones are numbered to correspond with this table. Price, not including hyoid and ossicles of the ear, first quality, $32; second quality, $28.

SAME (including chart).
But in plain pine chest, with tray.
Price, first quality, $28; second quality, $24.

DISARTICULATED SKELETCN IN OAK CHEST

II DISARTICULATED HUMAN SKELETON.

But with disarticulated skull, which has a separate chest for itself. Hyoid and ossicles of one ear included.

Price, 1st quality, in oak chest, $42; in pine chest, $37.

Price, 2d quality, in oak chest, $36; in pine chest, $33.

Nothing more helpful to the medical student has ever been devised.

III HALF SKELETON, Disarticulated.

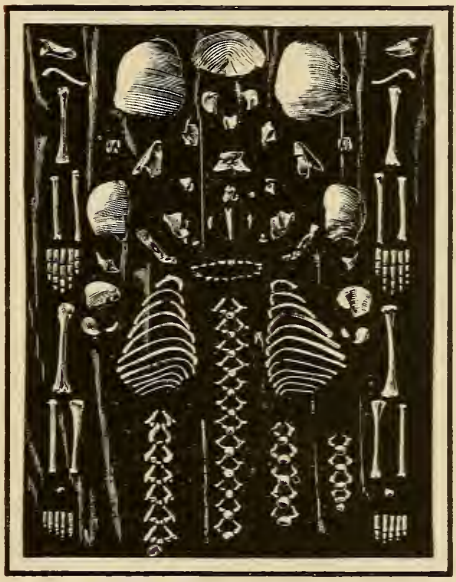
(Including complete skull and vertebral column). Hand, foot and column mounted on catgut, skull horizontally sectioned. Bones numbered to correspond with chart.

Price, in pine chest with compartments, $18.
A cheap, yet reliable preparation.

IV INFANT SKELETON,
Disarticulated.

The bones, including those of the skull, are arranged serially upon supports resting on a black background; the whole enclosed within a frame, with glass front. Specimen is designed to hang from wall.

Price, according to size, from $20 to $35.



IV. SKELETON OF INFANT.

V FŒTAL SKELETON,
Disarticulated.

Arranged as above.

Price, $20 to $25.

VI FŒTAL SKELETON, Disarticulated.

In small chest with compartments. The component bones, including those of skull, are numbered to correspond with a chart which is included.

Price, $20.

SPECIAL SKELETONS, UNMOUNTED.

VII SKELETON OF YOUTH.

Entirely disarticulated, including skull. All the principal epiphyses are present.

Price, in oak compartment chest, and with separate chest for skull, $50.

VIII ADULT SKELETON; Osteological and Anthropometric Features Labeled.

Skeleton, including skull, entirely disarticulated. Every bone with its name, divisions, borders, surfaces, foramina, grooves, fossæ, articular surfaces, ridges, processes, etc., and all the craniometric points labeled directly upon the parts. By means of various tints, each class of details is differentiated; the names of anthropometric points, for example being printed in green. In the paired bones, and those arranged serially, certain details are confined to one, other details to another, to avoid confusion.

Bones of 1 hand, 1 foot and vertebral column, articulated on catgut.

Price, in oak compartment chest, with separate chest for skull, $100.

IX ADULT SKELETON, with Colored Muscular Areas.

This is a disarticulated skeleton, with disarticulated skull, upon which the areas of muscular insertion are outlined in colors, (origins in red, insertions in blue) with names of muscles in white. Hyoid and ossicles of ear are included, and preparation is arranged in oak compartment chest, with a separate chest for the bones of the skull.

Price, with colored areas applied to bones of one side only, $85.

Price, areas of both sides colored and labeled, $127.

This preparation may be seen in the U. S. Army Medical Museum.

HUMAN SKULLS.

10 ADULT SKULL, Extra Quality,

With perfect permanent dentition; jaws articulated on springs; cranium with horizontal section to permit exploration of brain cavity.
Price, $12.

11 ADULT SKULL, First Quality,

Mounted as above.
Price, $9 to $12.
Price depends upon whiteness, perfection of dentition and condition of development.

12 ADULT SKULL, Second Quality,

Mounted as above.
Price, $5.00 to $8.50.

(Slightly imperfect or discolored, or lacking several teeth. A large majority of skulls belong under this quality.)

13 ADULT SKULL, with Horizontal and Vertical Sections.

(The latter to disclose the nasal fossæ, ethmoidal sinus, etc.)
Price, according to quality, $10 to $13.

14 SKULL WITH SEVEN SECTIONS,

First, Quality Adult.

Disclosing the sinuses, crania land nasal fossæ, etc. Both temporals are detachable and dissected, disclosing the middle and the internal ear, the former with drum and ossicles in situ, the latter with labyrinth, cochlea and semi-circular canals opened for inspection.
Price, $20.
Price, including standard, $21.50.

SKULL WITH 7 SECTIONS ON STANDARD.

15 ADULT SKULL, Labeled.

With every process, foramen, component bone, suture, fossa and craniometric point, accurately labeled in colors directly on the bone. The interior of the brain cavity is exposed by a horizontal section and fully named.
Price, $16.

16 ADULT SKULL, Showing Diploë,

With the outer table of the calvarium removed to show the venous canals of the diploë, which are colored blue.
Price, $15.

17 ADULT SKULL, Muscular Areas Colored.

The areas of attachment of the muscles of one side of the head are colored (origins, red; insertions, blue), and the name of each muscle is printed upon its area of insertion. A beautiful and most instructive preparation.
Price, $16.

A SKULL STANDARD is recommended for any of the above skulls, both as a protection against injury, and an aid to examination as well. For description, see page 25.

18 ADULT SKULL, Bones Differentiated.

Each bone is colored a distinctive tint. Very useful in displaying their boundaries, particularly in regions where the sutures become obliterated by age. Mounted upon vertically-revolving standard with polished walnut base.
Price, $16.

19 DISARTICULATED SKULL, Youth or Young Adult,

In elaborate chest with compartments, tray, etc. A complete epitome of the bones of the skull is attached to inside of cover. A favorite and most necessary preparation for students and anatomists.
Price, finest quality, $18; good quality, $15.
The ossicles of the Ear and Hyoid are not included in the above.
HYOID, Price, $3.

OSSICLES OF THE EAR, set of six, those of right and left sides separated. In glass-top box. Price, $3.

20 FŒTAL OR INFANT SKULL, Disarticulated.

A necessity in the study of cranial development.
Price, in compartment box, $10.

21 SKULL OF AGED SUBJECT,

Illustrating the progressive obliteration of the sutures, loss of teeth with absorption of the alveoli, and increase in the angle of the jaw, producing that prognathism and shorten-

ing of the face, so characteristic of edentulous senility.
Price, $7 to $10.
Some unusually fine specimens in stock.

21b SKULL, Divided into Three Segments,

The so-called component vertebrae of Goethe, Oken, Owen, and others. A very fine illustration of the theory of the Philosophical School of Anatomy as to the origin of the cranium. Each segment mounted on an independent standard, whose base slides to and fro on a grooved pedestal, permitting separation and reassemblage of parts at will.

21c ADULT SKULL,

Containing falx, tentorium, and dura mater, in situ. A section of each parietal is removed to permit examination of the interior.
Price, $18.

22 SKULL OF CHILD, First Quality,

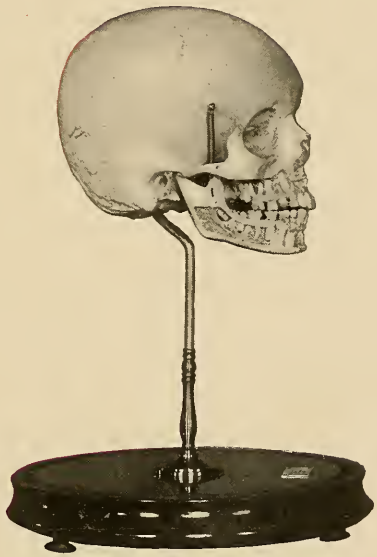
With upper and lower jaws dissected to expose the permanent teeth in process of development above the functional deciduous series.
Price, under glass dome, polished pedestal, $22.
Price, without dome or pedestal, $18.

23 SKULL OF CHILD.

Various ages.
Price, $6 to $12.

24 SKULL OF FŒTUS.

Price, $3 to $6.
To preserve intact the delicate processes found upon the basal aspect of the skull, a suitable support is recommended.



Copyright, 1902, by Charles H. Ward.
SKULL No. 22. (DOME REMOVED).

SKULL STANDARD, Peabody Museum Pattern.

This standard consists of a threaded shaft rising from a polished walnut base, upon which revolves a collar bearing

three curved arms which securely grasp the skull. The skull is held in its normal position, is turned from side to side by a touch, and is effectually protected from injury. The standard may be instantly removed if desired. Recommended by Prof. F. W. Putnam, of the Peabody Museum of Archæology and Ethnology as the best skull standard made. (See cut of skull, page 23, for view of standard in use.)
Price, adult size, nickel plated, each, $1.50. Per dozen, $15.
Price, smaller size, for fœtal and infant skulls, each, $1.

25 ADULT HUMAN SKULL, Mounted with Bones Spaced, (Beauchéne's method) upon a mechanical support. The bones of the face are separable from the cranium; the maxillæ separate to permit inspection of the nasal fossæ; the cranium reverses to facilitate the study of the base, etc. The temporals are removable and sectioned, revealing the middle and the internal ear, the former with tympanum and ossicles; the latter with opened cochlea and semi-circular canals. Both upper and lower jaws are dissected, exposing the roots of the teeth with their pulp-cavities, blood-vessels, and nerves. Mounted upon an elaborate support of burnished brass, with ebonized pedestal and glass dome. One of the finest and most useful preparations of the human skull ever devised.
(See Fig. on opposite page.)
Price, $65.

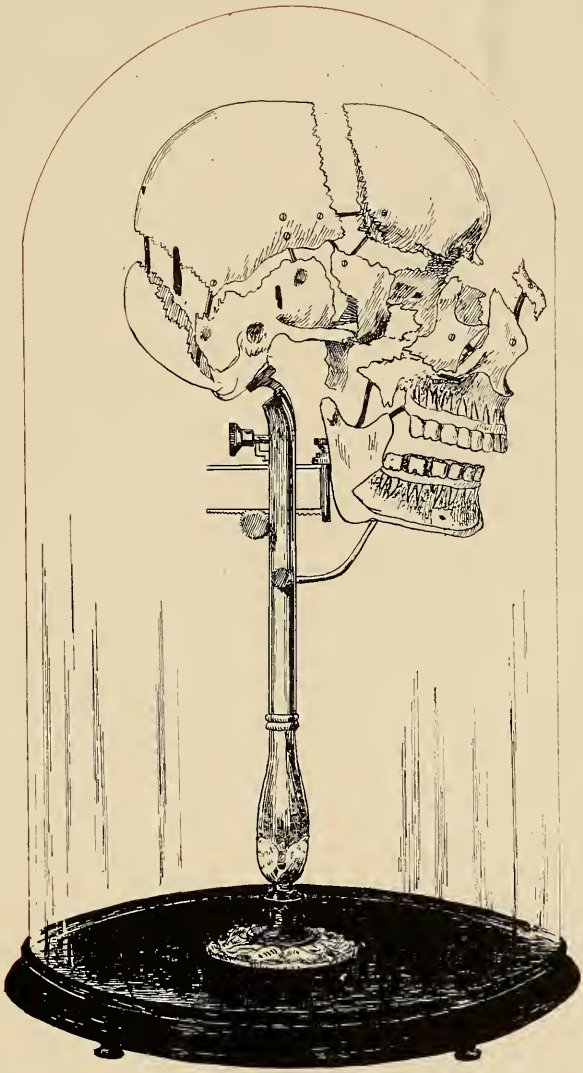
25b HALF-SKULL,

Immovably mounted upon ebonized panel, after Beauchéne's method. Temporal and maxillæ not dissected.
Price, $12.

Especial attention is given to the selection of the various normal types of the skull, to the measuring of the cubic capacity, the estimation of the various cranial indices, etc.

FOR FRACTURES AND PATHOLOGICAL CONDITIONS OF THE SKULL. Send for my Price List of Fractured and Diseased Bones. A MS. list of Aboriginal Crania will be sent on application.

FOR FAC-SIMILE CASTS OF RARE TYPES OF CRANIA, see index under casts of skulls.



No. 25. SKULL MOUNTED A-LA-BEAUCHENE.

INDIVIDUAL BONES OF THE SKULL.

THESE CAN BE FURNISHED FROM EITHER ADULT OR INFANT SUBJECTS.

Prices are for carefully selected specimens.

NAME OF BONE.	PRICE. Young.	Adult.
Ethmoid,	$3.00	$3.50
Frontal,	1.50	2.00
Inferior Turbinated,	.75	1.00
Inferior Maxillary,	1.50	1.50
Lachrymal,	.75	1.25
Malar,	.50	.50
Nasal,	.50	.50
Occipital,	2.00	2.00
Palate,	2.00	2.50
Parietal,	1.00	1.50
Sphenoid,	3.00	3.50
Superior Maxillary,	1.50	1.75
Temporal,	1.00	1.25
Vomer,	.75	1.00
Incus,	.50	.50
Malleus,	.75	.75
Stapes,	.50	.50
Tympanic Ring,	.65	
Cornua Sphenoidalia, (per pair)		3.50

INDIVIDUAL BONES OF THE SKELETON.

(Not including skull.)

	1st Qual.	2d Qual.
Atlas,	$ .75	$ .50
Axis,	.75	.50
Carpal, each,	.30	.20
Clavicle,	.75	.50
Coccyx, complete,	1.50	1.20
Femur,	3.00	2.25
Fibula,	1.50	1.00
Humerus,	2.00	1.00
Hyoid,	3.00	2.25
Innominate,	1.25	1.00
Metacarpal, any digit, each,	.25	.20
Metatarsals, " "	.25	.15
Phalanges of Hand or Foot, proximal, any digit, each,	.20	.15
Phalanges of Hand or Foot, median, " "	.20	.15
Phalanges of Hand or Foot, distal, " "	.50	.35
Patella,	.50	.35
Radius,	1.00	.75
Ribs, each,	.35	.25
Sacrum,	1.50	1.00
Sesamoids, Thumb, per pair, (Seldom secured.)	2.00	
Sesamoids, Great Toe, per pair,	1.00	
Scapula,	1.50	1.00
Sternum, without Cartilages,	1.00	.75
Tarsal, each,	.40	.30
Tibia,	1.50	1.00
Ulna,	1.00	.75
Vertebræ, (except Atlas and Axis), each,	.50	.35

For Bones of Young Subject, with epiphyses not yet united, add 50 per cent. to price of first quality adult bones.

Bones of Aged Subject, exhibiting senile characteristics, may be had at prices of first quality adult bones.

A large number of Healed Fractures and pathological conditions are described in my "Price List of Fractured and Diseased Bones."

For copy, address

CHARLES H. WARD,
~~45 and 47 Mt. Hope Avenue~~ 387 West Ave., Rochester, N. Y.

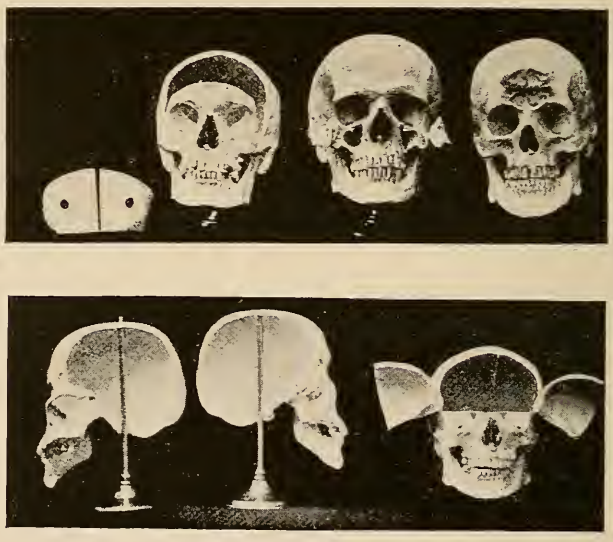
SKULLS SECTIONED TO DEMONSTRATE THE CRANIAL SINUSES.

SERIES OF SECTIONED SKULLS,

Showing the accessory sinuses of the nose. This series was designed by Dr. George M. Lefferts, of the College of Physicians and Surgeons, New York City, and executed by Mr. Ward for him. As seen in the cut, the idea is to limit the attention of the student to one point on each specimen. The maxillary, frontal, ethmoidal and sphenoidal sinuses are in turn revealed in four of these preparations, the fifth being sagittal sections of the entire skull a little to one side of the median line. (In left upper and right lower skulls in cut, sections are now removed entire instead of bisecting as shown.) Such skulls are selected for the series as will best illustrate variations of the nasal septum. Each piece is mounted on an appropriate standard.

Price, series of five skulls sectioned as above, $75.

Price of individual skulls, each, $15.



The following letter is printed by permission:

JOHNS HOPKINS UNIVERSITY MEDICAL SCHOOL

Baltimore, March 3d, 1899.

Mr. Charles H. Ward,

Dear Sir:—The series of skulls showing the anatomy of the nasal accessory sinuses which you have recently made to my order, are as well done as any I have yet seen. The work on them is eminently satisfactory, and they have been of great practical use to me in my class lectures and demonstrations.

Yours very truly,

JOHN N. MACKENZIE,

Professor of Laryngology and Rhinology in Johns Hopkins Medical School and Laryngologist to the Johns Hopkins Hospital.

TEMPORAL BONE AND EAR.

26 TEMPORAL BONE, INTERNAL EAR, Dissected.

With vestibule, cochlea, semi-circular canals, etc., opened for inspection. Sections are assembled in one piece and supported by a standard.

Price, $7.

TEMPORAL No. 26. TEMPORAL No. 27.

27 TEMPORAL BONE, MIDDLE EAR, Dissected.

Sections are hinged and mounted upon standard. The tympanic membrane is represented, with the ossicles in situ; the section also reveals the mastoid cells.

Price, $7.

27b TEMPORAL BONE, MIDDLE AND INTERNAL EARS
Dissected as in Nos. 26 and 27.
Somewhat more fragile than the above and not mounted on standard.
Price, $10.

28 OSSICLES OF THE HUMAN EAR, Set of Six.
In glass-top box, with ossicles of each side in separate compartment and labeled.
Price, $3.
Price, ossicles of one ear only, in glass vial, $1.25.

29 COLLECTION OF TEMPORALS.
Preparations and dissections of the temporal at various ages, of the ossicles, and two beautiful preparations of the muscles, nerves and blood vessels of the temporal region, modeled in wax upon the actual bones. Collection comprising 18 pieces, in glass case.
Price, $90.
For Models of the Ear see index, under Anatomical Models.

THE JAWS AND TEETH.

PREPARATIONS ILLUSTRATING HUMAN ODONTOLOGY, Development Series.

30 SKULL OF FŒTUS,
Prepared to show germs of teeth, in situ.
Price, $6.

31 JAWS OF INFANT,
On standard. Deciduous dentition.
Price, $8.

32 SKULL OF CHILD,
With jaws dissected to expose the second teeth in process of development. Illustrated on page 25.
Price, with glass dome and polished walnut pedestal, $22.
Price, without standard and dome, $18.

33 SKULL OF ADULT,
With perfect, permanent dentition.
Price, $12.

34 JAWS OF ADULT,
Permanent dentition. Mounted. Price, $8.

35 **SKULL OF AGED SUBJECT,**
Edentulous. Cut on next page.
Price, $9.

36 **ADULT LOWER JAW,**
Showing "antegonium" of Harrison Allen.
Price, $2.50.

37 **EDENTULOUS LOWER JAW.**
Price, $2.50.

38 **LOWER JAW, SERIES OF 8 PREPARATIONS**
Showing its development, articulation, mucous and muscular areas, sub-cutaneous portions, structure, etc.
Price, $24.

39 **COMPARISON OF THE ANGLE OF LOWER JAW**
Of infant, adult, and aged persons. On standard. Illustrated on next page.
Price, $7.

40 **SET OF GERMS OF TEETH** (fœtal),
Arranged in two dental arcades, with standard. See illustration.
Price, $4.50.

41 **SET OF DECIDUOUS TEETH,**
Mounted in two dental arcades as above. See illustration.
Price, $6.

42 **SET OF PERMANENT TEETH,**
Perfect, mounted in two dental arcades, as in life. See illustration. Mounted upon standard.
Price, $8.

43 **COMPARISON OF SUPERIOR DENTAL ARCADES**
Of infant and adult. On standard.
Price, $10.

44 **DENTAL NERVES.**
Dissected maxillæ and mandible, upon which the distribution of the fifth nerve can be traced to the teeth. On standard, under glass dome.
Price, $14.

45 **DENTAL ARTERIES.**

Preparation similar to No. 44, but showing the distribution of the internal maxillary artery to the teeth. On standard, under glass dome.

Price, $15.

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46 **DENTAL NERVES AND ARTERIES**

In their relation with the teeth, upon the dissected maxillæ and mandible, as above. On standard under glass dome. A very beautiful preparation.

Price, $22.

47 JAWS OF ADULT,

As above, with arteries, veins, and nerves. On one side the roots of the teeth are dissected, exposing the pulp canal. On standard with glass dome. See illustration.
Price, $16.50.

48 INTERNAL MAXILLARY ARTERY

And its branches, in relation with the corresponding veins, upon the bones, as above. Mounted under glass dome.
Price, $22.

These preparations of nerves and blood vessels are not represented in their entire course, but only that portion in relation with the teeth.

49 HISTORY OF THE DENTITION,

From the fœtus to old age, showing the formation and eruption of each one of the deciduous and permanent teeth. Composed of twenty-four pieces, comprising fœtal skulls, series of upper and lower jaws, and two half-heads, one representing the first seven pairs of cranial nerves, with the eye, the ear, and their nerves; the other piece with the veins and arteries of the skull. Mounted on individual pedestals under neat glass case. This collection is imported to order only.
Price of collection, including case, $235.

SKULLS ILLUSTRATING ABNORMALITIES,

Including examples of suppression and impaction of teeth, supernumerary teeth, hyperostosis of alveolar walls, torus palatinus of Harrison Allen, etc.
Price, per skull, mounted on standard, $7 to $16.
Series of 10 skulls, carefully selected, $100.

SKULLS ILLUSTRATING PATHOLOGICAL CONDITIONS,

Including examples of Caries, Pyorrhœa alveolaris, Tartar, Green Stain, Pitted Enamel, Corrugated Enamel, Alveolar and Antral Abscesses, etc.
Price, each, on standard with label, $7 to $14.
Price, series of 10 skulls, $110.

Note.—The above specimens and those included in the following series, particularly the skulls of aborigines, are not in

every case anatomically perfect. They are selected solely for their fitness to illustrate the points noted.

SERIES ILLUSTRATING THE DENTAL INDEX.

The Dental Index of the late Sir William H. Flower of the British Museum, is one of the most useful of the craniometric indices for differentiating races according to their position in the scale of civilization. It is explained by a chart, and its recognized sub-divisions illustrated by three skulls, mounted on standards and presenting Microdont. Mesodont and Megadont indices respectively. The higher indices are found only among Yellow and Black Races.
Price of series, with chart, $36.

SERIES ILLUSTRATING PALATE VARIATIONS.

A	Typical forms in the white race.	Flat. Gothic. V-Shaped. Horse Shoe. Saddle Shaped.
B	Broca's ethnological varieties of sup. dental arch.	Parabolic Arch. Hyperbolic Arch. Elliptical Arch. U-Shaped Arch.
C	Sir Wm. Turner's anthropological varieties of the palate.	Dolichuranic. Mesuranic. Brachyuranic.

The series is composed of twelve skulls of both civilized and savage races, with one cast of skull of very rare type, all mounted on standards, (similar to the Degrees of Wear shown in cut) and with explanatory charts and labels.
Price of series, $145.

SERIES ILLUSTRATING DEGREES OF WEAR

Of the teeth, as measured by the late Prof. Paul Broca. Consisting of four skulls, mounted as in cut, and with explanatory chart. One or more Aboriginal skulls are included.
Price of series, with chart, $42.

DEGREES OF WEAR OF THE TEETH.

SERIES ILLUSTRATING PROGNATHISM.

The Gnathic index, established by the late Sir William H. Flower, to determine the degree of superior prognathism, is illustrated both by a chart and by a series of three skulls, aboriginal, and European, illustrating the Orthognathous, Mesognathous and Prognathous types. Mounted on skull standards.

Price of series, with chart, $35.

SERIES ILLUSTRATING VARIATIONS DUE TO DEVELOPMENT OF MUSCLES OF MASTICATION.

A	Position of temporal ridge. - -	Skull of European. Skull of Aborigine.
B	Width of ascending ramus of jaw, -	Jaw of European. Jaw of Aborigine.
C	Angle of jaw, - - -	Examples of both outwardly and inwardly everted angles.
D	Parallelism of borders of Ramus, - - - - -	Jaw of Mound Builder. Jaw of American White.
E	Comparison of Symphysian Angle, - - - - -	Jaw of American White. Jaw of American Aborigine.
F	Sexual differences, - -	Typican Jaw of White Woman. " " " White Man.

Price, complete series, mounted on individual standards and with explanatory labels, $42.

SERIES OF ABNORMAL TEETH.

Each mounted on independent standard and labeled. Collection of 50, including many rare abnormal and pathological types. Price, $40.

SERIES ILLUSTRATING POSITION OF INF. THIRD MOLAR.

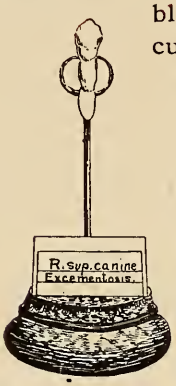
Jaw of Aborigine. Third molar in front of anterior border of coronoid process.

Jaw of European. Third molar partly hidden by anterior border of coronoid process.

Price, series of two jaws, mounted, and with explanatory labels, $6.

TOOTH STANDARD,

Upon which a specimen can be instantly mounted. With blank label supported by slot in pedestal, as in cut. This standard is invaluable for the permanent preservation of the many rare and valuable abnormalities met with in practice, and commonly consigned by the busy dentist to a drawer or shelf, whence they inevitably disappear. Several hundred of these have been supplied to the Army Medical Museum.



TOOTH STANDARD.

Price, nickel plated, with polished walnut pedestal and blank label, each, 25c.; per dozen, $2.50; per hundred, $15.

For models illustrating the development and structure of the teeth, consult index.

THE VERTEBRÆ.

50 ADULT VERTEBRAL COLUMN,

Including sacrum and coccyx, strung on catgut and accurately numbered.

Price, finest quality, ~~$7.~~ 9

~~Price, good quality, $6.~~

51 VERTEBRAL COLUMN,

As above, but lacking sacrum and coccyx.

Price, $4.

52 VERTEBRAL COLUMN,

With each vertebra on independent standard and base to slide in runway upon supporting pedestal. The natural curves of the spine are preserved. An extremely handsome as well as practical mounting.

Price, $15.

For single vertebræ, see table of bones, page 29.

53 SERIES OF FIVE VERTEBRÆ.

Atlas, Axis, Typical Cervical, Thoracic and Lumbar—in neat compartment box and numbered to correspond with label.
Price, $4.50.

54 THORACIC SEGMENT.

To a single anterior thoracic vertebra is attached the corresponding pair of ribs, the latter being met by their appropriate sternal segment with its costal cartilages. Here, at a glance, are seen the two parallel tubes of the vertebrate body, the hæmal and the neural.
Price, $3.75.

55 ENLARGED MODELS OF TYPICAL VERTEBRÆ

For class-room demonstration, (each 18 inches in transverse diameter), including the five following, viz: Atlas, Axis, Sixth Cervical, Fourth Thoracic and Third Lumbar Vertebræ. These are made to order only.
Price, per set of five, $60; single model, $15.

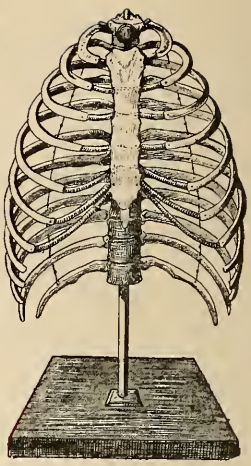
56 THE TRANSVERSE OR VERTICAL SECTIONS OF ANY VERTEBRA,

Mounted serially upon a slab of black slate. A beautiful preparation for exhibiting structure.
Price, $2.50.

57 HUMAN THORAX,

With movable ribs to illustrate the mechanism of respiration. This preparation consists of the pre-sacral vertebræ mounted in an upright attitude, to which are attached the ribs in such manner that they may be simul-

taneously raised and lowered at will, thus increasing and decreasing the diameters of the thoracic cavity as in life. An object lesson on the effects of tight clothing. On polished quartered oak pedestal. (A much handsomer preparation than that illustrated, which lacks lumbar and cervical vertebræ.)
Price, $18.



No. 57. THORAX.

58 SERIES OF FIVE EXAMPLES OF VARIATIONS OF SEVENTH CERVICAL VERTEBRA.

Price, $5.

59 SERIES OF SIX ATLASES,

Including Mound Builder and American Negro, showing variations of form.
Price, $12.

62 A SINGLE VERTEBRA,

Mounted on standard with polished walnut base, with osteological features accurately labeled directly on the parts.
Price, $2.50.

63 A MEDICO LEGAL RELIC FROM THE GUITEAU TRIAL.

Preparation consisting of the first and second lumbar and eleventh and twelfth thoracic vertebræ, with their ribs, upon which is marked the course of the bullet that killed the late President Garfield. This preparation, made by the late Dr. Sherfurt, Preparateur of the Army Medical Museum, was used in this celebrated trial, and is fully authenticated.
Price, mounted under glass dome, $25.
Price, as it is, without dome, $20.

For Kyphoses, Scolioses, Potts' Disease, Spina Bifida, Fractures, and abnormalities of the vertebral column, or of individual vertebræ, see my Catalogue of Fractured and Diseased Bones. Copies will be mailed on application.

CHARLES H. WARD,
~~45-47 Mt. Hope Avenue,~~
Rochester, N. Y.

THE RIBS.

64 COMPLETE SET OF RIBS,
Price, $3.50.

65 RIBS OF ONE SIDE ONLY,
Price, $2.00.

66 RIB SHOWING HEALED FRACTURE,
Price, $1.

THE STERNUM.

67 ADULT STERNUM,
Price, $1.

68 ADULT STERNUM, with Costal Cartilages.
Price, $2.50.

69 STERNUM OF CHILD AT BIRTH,
Mounted on a standard,
Price, $3.

70 STERNUM OF AGED SUBJECT,
With progressive ossification of costal cartilages rendering chest walls immobile.
Price, $3.50.

THE PELVIS.

71 ADULT PELVIS of Either Sex, Articulated.
Price, $5.

72 A SINGLE OS INNOMINATUM, Either Sex,
Price, $1.25.

73 PELVIS OF CHILD AT BIRTH.
Ligamentary specimen, Mounted on Standard.
Price, $4.50.

73b PELVIS OF YOUNG SUBJECT
Of known age. Specimens from one year old upward. Valuable for the study of sexual differentiation.
Price, $6 to $15, according to age.

74 PELVIS WITH LIGAMENTS,
With upper third of the femora and with two or three lum-

bar vertebræ, prepared with artificial ligaments, complete obturator membranes, etc.; either sex.
Price, $10.

No. 74, FEMALE PELVIS WITH LIGAMENTS.

74b FEMALE PELVIS,
With diameters indicated by nickeled brass rods. Artificial ligaments as in No. 74.
Price, $13.50.

75 FEMALE PELVIS, with Artificial Ligaments
Containing fœtal skull at full term.
Price, $15.

76 FEMALE PELVIS,
With artificial ligaments containing fœtal skeleton with limbs flexed as at birth.
Price, $20.

77 PELVIS OF YOUNG SUBJECT,
With epiphyses and component bones mounted with spaces. (Beauchêne's method.)
Price, $15.

78 ADULT PELVIS, Male or Female,
One side with every foramen, process, component bone, etc., accurately labeled; the other side with areas of muscular insertion colored, origins red, insertions blue, and name of muscle in white.
Price, $15.

79 PELVIS AS ABOVE,
With component bones differentiated by colors.
Price, $8.50.

79b ADULT PELVIS, Vertically Sectioned,
Through acetabuli, for the study of the architecture of the pelvic girdle. Sections are re-assembled by hooks and pins.
Price, of either sex, $8.50.

For fac-similes of abnormal forms of the pelvis consult index under models. For abnormal or pathological specimens of the actual pelvis, send for my Catalogue of Fractured and

Diseased Bones. For pelvis of lower animals see Comparative Osteology.

BONES OF THE ARM AND HAND.

80 ADULT SCAPULA, Right or Left of Either Sex.

Price, $1.50.

81 SCAPULA, with all Parts Labeled,

Directly upon the bone.
Price, $3.00.

82 SCAPULA AND CLAVICLE of Child at Birth,

Ligamentary specimen, mounted.
Price, $3.

83 SCAPULA OF YOUNG SUBJECT,

With Epiphyses.
Price, $2.50.

84 ADULT SCAPULA, with Sections

Through neck and spine to show structure. Sections re-assembled and held in position by hooks and pins.
Price, $3.

85 ADULT SCAPULA, with Areas of Muscular Insertion

Indicated in colors and labeled.
Price, $3.50.

86 SERIES OF SIX SCAPULÆ,

Illustrating variations in form.
Price, $10.
For Scapulæ of types of the lower animals see index under Comparative Osteology.

87 ARM, HAND AND SHOULDER-GIRDLE, Unmounted.

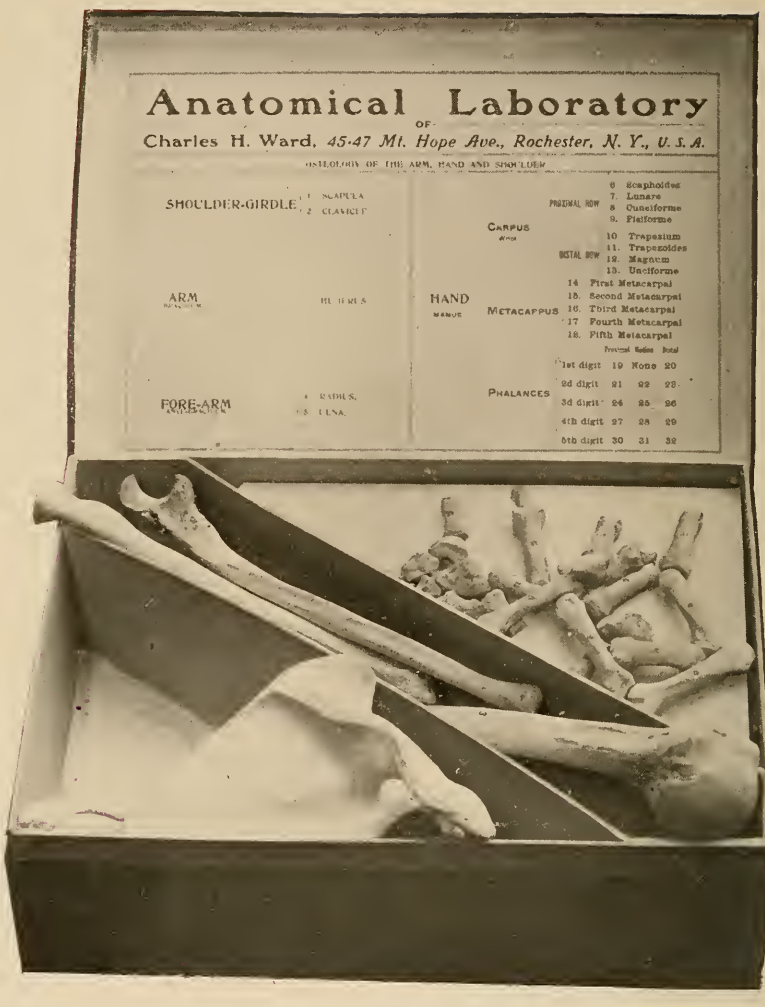
Price, first quality, $5; second quality, $4.

88 ARM COMPLETE, of Child at Birth,

Ligamentary specimen, mounted.
Price, $3.50.

89 ADULT ARM, Complete, Unmounted,

In neat compartment box. Bones numbered to correspond with explanatory label shown in illustration.
Price, $7.



No. 89. ARM, HAND AND SHOULDER-GIRDLE, IN CHEST.

90 **ADULT ARM, Articulated with Catgut.**

Bones may be separated for study.
Price, best quality, $8; second quality, $6.50.

91 **ADULT ARM, with Areas of Muscular Attachment**

Indicated by colors and distinctly labeled. The areas of origin are colored red; of insertion, blue. Articulated.
Price, $15.

92 **ARM OF YOUNG SUBJECT,**
With bones and their epiphyses mounted with spaces. On polished oak pedestal.
Price, $22.

93 **ARM FOR DEMONSTRATING DISLOCATIONS,**
Mounted to permit of the various luxations observed in practice. The movements are natural, the articular surfaces being continually opposed by means of invisible springs. The phalanges are flexibly articulated.
Price, $15.

94 **HAND, Mounted on Catgut.**
Bones can be separated for study, while simply pulling a string brings them back into place.
Price, finest quality, $4.50.
Price, second quality, $3.50.

95 **HAND, Rigidly Articulated.**
Price, $3.50.

96 **HAND, Flexibly Articulated.**
Phalanges having the same range of movement as in life.
Price, $5.

97 **HAND, Unmounted.**
Price, first quality, $3.

98 **HAND, Ligamentary Preparation.**
Price, $6.

99 **HAND, Adult, with Bones Spaced,**
(Beauchéne's method) and mounted on an elaborate standard with polished walnut pedestal. By revolving on standard, either dorsal or ventral surface may be inspected.
Price, $10.

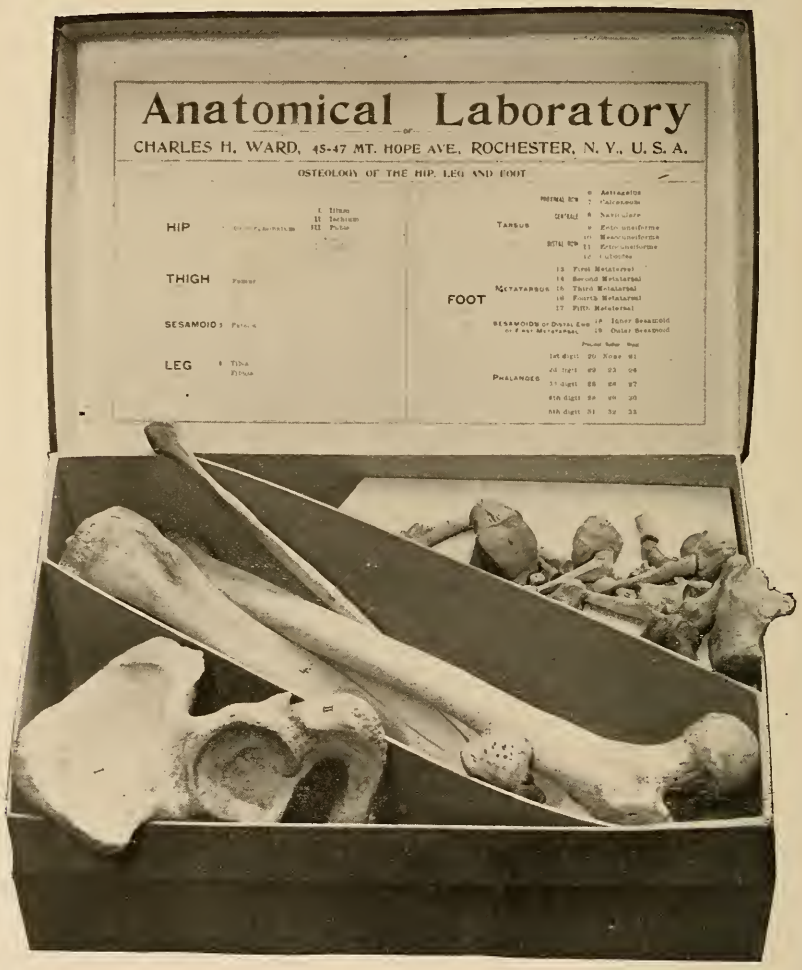
100 **HAND OF YOUNG SUBJECT,**
Mounted similarly to above, but with epiphyses also separated.
Price, $15.

101 **HUMERUS, Osteological Features Labeled.**
Adult.
Price, $2.75.

102 **HUMERUS, with Areas of Muscular Insertion,**
Indicated by colors and distinctly labeled.
Price, $3.25.

For individual bones of the arm, see table of bones, page 29. Consult my Catalogue of Fractured and Diseased Bones for fractures of the arm.

A list of arms of various types of animals for comparative study may be found by consulting index under Comparative Osteology.



No. 104 BONES OF THE LEG

BONES OF THE LEG AND FOOT.

103 **ADULT LEG WITH HALF PELVIS AND FOOT.**
Bones are mounted on catgut to allow of their separation for study.
Price, best quality, $8.
Price, second quality, $6.

104 **ADULT LEG AS ABOVE, Unmounted,**
In neat box with compartments. Bones numbered to correspond with explanatory label. See illustration.
Price, $8.

105 **LEG, HALF PELVIS AND FOOT, Unmounted.**
Price, first quality, $7; second quality, $5.

106 **LEG OF CHILD AT BIRTH,**
Ligamentary preparation, mounted on a standard.
Price, $3.50.

107 **ADULT LEG, with Muscular Areas**
Indicated by colors and distinctly labeled. Bones articulated, allowing flexion of knee, ankle, etc.
Price, $15.

108 **DISLOCATING LEG,**
So mounted as to admit of practice of dislocation at will. Flexures are also made naturally, the articular faces of the bones being continually maintained in contact by concealed springs. Foot with flexible phalanges.
Price, $15.

109 **LEG OF YOUNG SUBJECT,**
With bones and their epiphyses mounted by Beauchene's method (with spaces), on polished quartered oak pedestal.
Price, $22.

110 **FOOT, Mounted on Catgut,**
Allowing bones to be separated or drawn together in their proper places.
Price, first quality, $4.50; second quality, $3.50.

111 **FOOT, Immovably Articulated.**
Price, $4.

112 FOOT, with Flexible Phalanges.
Price, $5.

113 FOOT, Unmounted.
Price, first quality, $3.

114 ADULT FOOT, Ligamentary.
Bones united by their natural ligaments.
Price, $6.

115 ADULT FOOT, Mounted a-la-Beauchéne,
(With bones spaced), on standard with polished oak base. The foot can be revolved to bring plantar surface uppermost, or detached from standard at will.
Price, $10.

116 FOOT OF YOUNG SUBJECT,
Mounted with bones and epiphyses slightly spaced. On standard with polished oak pedestal.
Price, $15.

117 ADULT FEMUR,
With every osteological feature accurately labeled directly on the part.
Price, $4.

118 FEMUR, with Muscular Areas
Indicated by colors and accurately labeled.
Price, $5.

For individual bones of the leg, see Table of Bones, page 29. For fractures, etc., see my catalogue of Fractured and Diseased Bones.

Illustrations of the comparative anatomy of the leg may be found by referring to index.

CHARLES H. WARD · ROCHESTER · N.Y. · U.S.A.

PREPARATIONS SHOWING STRUCTURE OF BONES.

119 **ADULT FEMUR** Longitudinally Bisected.
Price, $3.50.

120 **FEMUR, with Five Sections,**
Exhibiting structure of head, neck, shaft and condyles. Sections assembled by hooks and hinges.
Price, $5.

121 **VERTICAL SECTION OF UPPER THIRD OF FEMUR,**
On black slate slab. A very beautiful preparation. See illustration.
Price, $2.

No 121. SECTION OF FEMUR.

122 **SHAFT AND CONDYLES OF FEMUR,**
Transverse sections as above.
Price, $1.50.

123 **FEMUR, Lower Third,** Vertical Section,
On slate.
Price, $2.

124 **TIBIA,**
Longitudinally Bisected.
Price, $1.25

125 **FIBULA,**
Longitudinally Bisected.
Price, $2.50.

126 **TIBIA AND FIBULA, Vertical Section**
Through upper or lower thirds of both bones mounted in relative positions on slate slab.
Price, $3.

127 ENTIRE FOOT, Longitudinal Section
On slate, showing structure, construction of arch, etc. A very beautiful preparation.
Price, $8.

127b TARSUS, Transverse Section,
Showing arch ; mounted on slate.
Price, $3.75.

128 HUMERUS, Upper Third, Longitudinal Section,
Exhibiting cancellar tissue, epiphyseal line, medullary cavity, etc. On slate slab.
Price, $2.

129 HUMERUS, with Five Sections,
Held by hooks and hinges.
Price, $4.

130 RADIUS AND ULNA, Bisected.
Price, each, $2.

131 CARPUS, TRANSVERSE SECTION,
Through distal row, on slate.
Price, $3.50.

132 CARPUS, HORIZONTAL SECTION,
On slate. The articular surfaces as well as the structure are beautifully demonstrated.
Price, $5.

133 PELVIS, Vertically Bisected,
Exhibiting its architecture. Sections close and hook, forming complete pelvis.
Price, either sex, $7.50.

134 SKULL, Sagittal Sections
Of entire skull and lower jaw, arranged serially on slate slabs.
Price, $25.

135 SKULL, Coronal Sections,
Mounted serially as above.
Price, $25.

136 VERTEBRA,
Lumbar or thoracic, series of transverse sections on slate.
Price, $2.

137 RIB, Longitudinally Bisected.
Price, $1.75.

138 DECALCIFIED HUMERUS.
The mineral constituents are removed by the action of acid, leaving the bone soft and flexible. This should be kept in dilute formalin or alcohol.
Price, $4.
Price, including glass jar, with formalin, $6.50.
Healed Fractures, Ankyloses and Abnormalities, seldom being duplicated, are described in a special Price List of Fractured and Diseased Bones.

139 CALCINED HUMERUS,
The animal matter has been removed by combustion leaving only the inorganic material which, while excessively brittle, retains the exact form of the bone.
Price, in glass-topped chest, $5.

MICROSCOPIC SLIDES
Of sectioned bones and teeth supplied on demand.

THE ARTICULATIONS.

These preparations are actual bones, to which artificial ligaments are accurately applied.

140 LIGAMENTS OF ENTIRE VERTEBRAL COLUMN.
Price, $16.

141 LIGAMENTS OF A PORTION OF THE SPINE.
Price, $8.

142 ARTICULATION OF THE SKULL WITH SPINE.
Price, $5.

143 LIGAMENTS OF THE STERNUM.
Price, $9.

144 COSTO-VERTEBRAL ARTICULATION.
Price, $4.50.

145 TEMPORO-MAXILLARY ARTICULATION.
Illustrated on page 34.
Price, $5.

146 ARTICULATION OF OS INNOMINATUM,
With column,
Price, $10.

147 ANTERIOR PUBIC LIGAMENT.
Price, $2.

148 ARTICULATION OF THE SHOULDER.
Price, $10.

149 THE SAME,
Opened, showing tendon of biceps.
Price, $8.

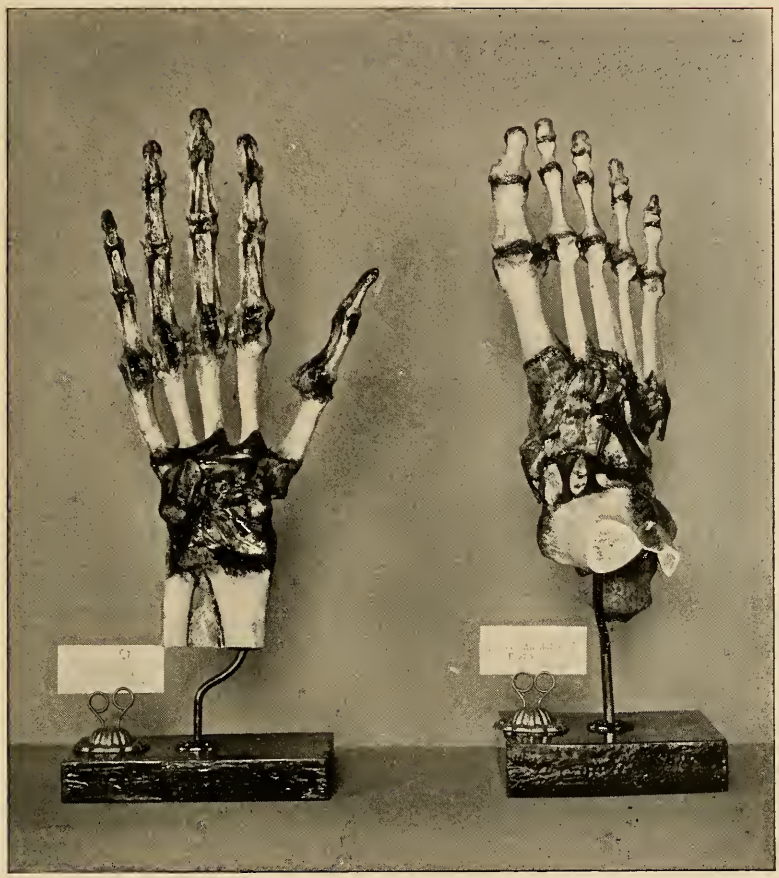
150 ARTICULATION OF ELBOW.
Price, $2.50.

151 ARTICULATION OF WRIST AND HAND.
Illustrated on page 53.
Price, $10.

152 ARTICULATION OF THE HIP,
Entire and opened, two pieces.
Price, $10.

153 ARTICULATION OF THE KNEE,
Entire and opened, two pieces.
Price, $15.

154 ARTICULATION OF FOOT AND ANKLE.
Illustrated on page 53.
Price, $10.



No 151

No. 154.

CUSTOM WORK IN HUMAN OSTEOLOGY.

The following prices apply only to adult homos received in good condition.

Attention is called to the fact that strongly injected subjects may refuse to macerate, while those injected with chloride of zinc or coloring matters will not bleach properly.

FOR MACERATING, DEGREASING AND BLEACHING

A subject "received in the rough," i. e., as it leaves the dissecting table.

Price, $15.

FOR MACERATING, BLEACHING AND MOUNTING

A subject as above.

Price, $35.

FOR MACERATING AND MOUNTING A SKULL,

With horizontal section.

Price, $5.

FOR MACERATING AND MOUNTING

An arm or leg.

Price, $8.

FOR CLEANING, REPAIRING AND RE-MOUNTING

An old mounted skeleton.

Price, $22.

This does not include the restoration of lost or broken bones, which are charged at prices quoted on page 23.

A CLUTCH STANDARD,

(See page 9) will be fitted to any skeleton.

Price, $12.

FOR PREPARING AND MOUNTING A FŒTUS,

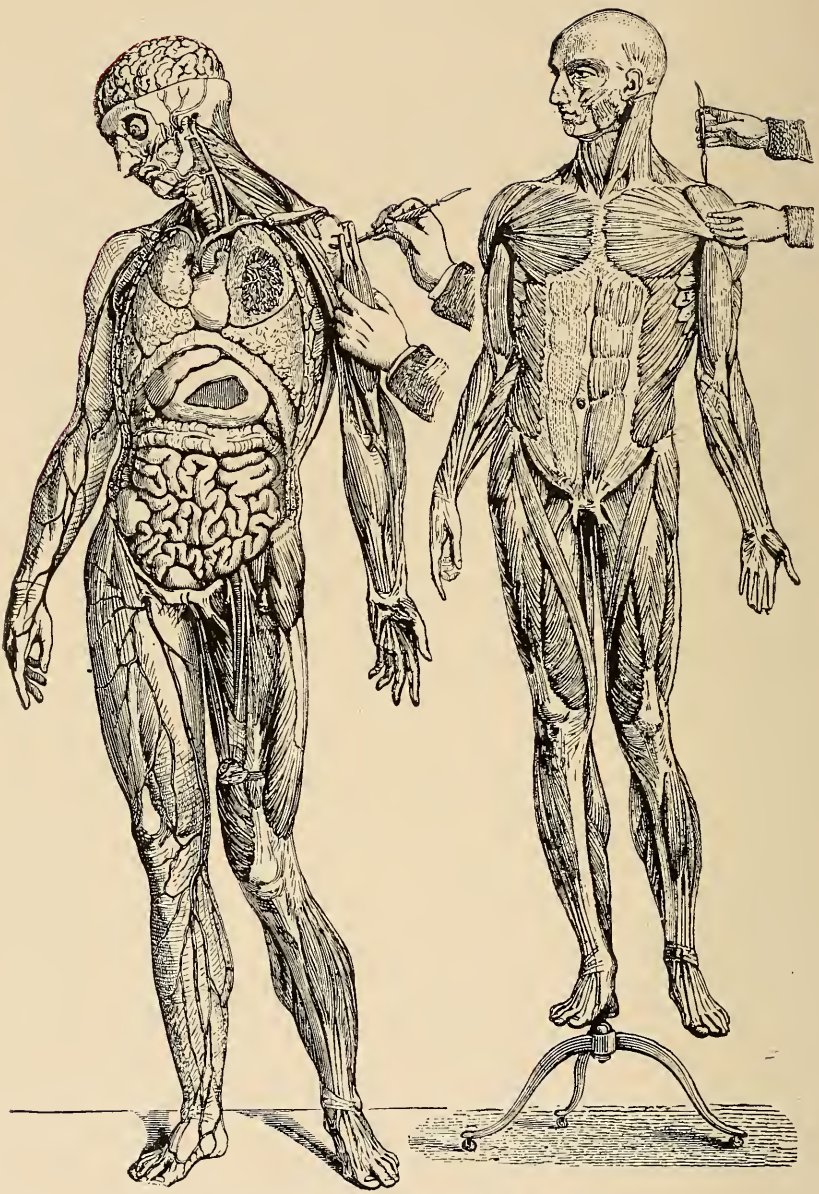
Infant or young subject as a ligamentary skeleton.

Price from $10 to $25, according to size and condition.

MODELS
ILLUSTRATING HUMAN ANATOMY.

In the following pages are listed only such models as personal inspection has shown to be thoroughly accurate and well made. Both the finer preparations as well as cheaper grades are quoted; of the former, those of Auzoux, Deyrolle and Ziegler are particularly recommended. As educational institutions are entitled to free entry of models imported to their order, the Auzoux models are quoted both with and without duty.

On all other models save those numbered in red, a discount of 25 per cent. from list price will be allowed institutions ordering for importation, (to whom a Custom House oath will be forwarded for signature and notary's seal). To private individuals the prices are net. Upon orders for models which are to be imported, at least 50 per cent. of price must accompany order, the balance to be paid upon notification of receipt. The more costly preparations are not kept in stock, being almost invariably ordered for duty free importation. Each model is carefully examined and any needed repairs made before it leaves my hands, and in nearly every case, a printed description is also supplied.



No. 1. MANIKIN, SHOWING METHOD OF DISSECTING.

COMPLETE FIGURES.

1 **MAN, COMPLETE,**

Height 1 m. 80 cm., (5 feet $10\frac{9}{10}$ inches), with nerves, veins and arteries, detachable and dissectible viscera and muscles, showing about 2,000 parts in detail and designed for the profound study of descriptive anatomy. See illustrations. A complete description accompanies each Auzoux model. That for this model covers 34 pages. (Auzoux No. 1.)
Price, $900; price, duty free, $675.

2 **MAN, COMPLETE,**

Height 1 m. 16cm., (3 feet $9\frac{7}{10}$ inches) with same details as No. 1. (Auzoux No. 2.)
Price, $465; price duty free, $340.

3 **MAN,**

Height 1 m. 80 cm., (5 feet $10\frac{9}{10}$ inches), for the use of institutions not making a specialty of medicine. This model represents on one side the superficial muscles and blood vessels; on the other side the deeper muscles, nerves and blood-vessels, and contains in the splanchnic cavities, the same organs as the complete model (No. 1), equally separable and dissecting. (Auzoux No. 3.)
Price, $350; price, duty free, $275.

3b **MAN,**

Height 1 m. 16 cm., (3 feet $9\frac{7}{10}$ inches) details like No. 3. (Auzoux No. 3, bis.)
Price, $235; price, duty free, $175.

4 **MAN,**

Height 1 m. 16 cm., like the preceding, with the exception of a few nerve filaments and the ramifications of a number of blood-vessels, which are only necessary for an exhaustive study of descriptive anatomy. (Auzoux No. 4.)
Price, $165; price, duty free, $124.

5 **MODEL OF MAN,**

Height 1 m. 45 cm., (4 feet 9 inches), showing on one side the superficial layers of muscles with the tendons, arteries and veins; on the other side the deeper parts with blood-vessels. Both arms are removable; also one side of head and neck, exposing a vertical median section of the brain and adjacent

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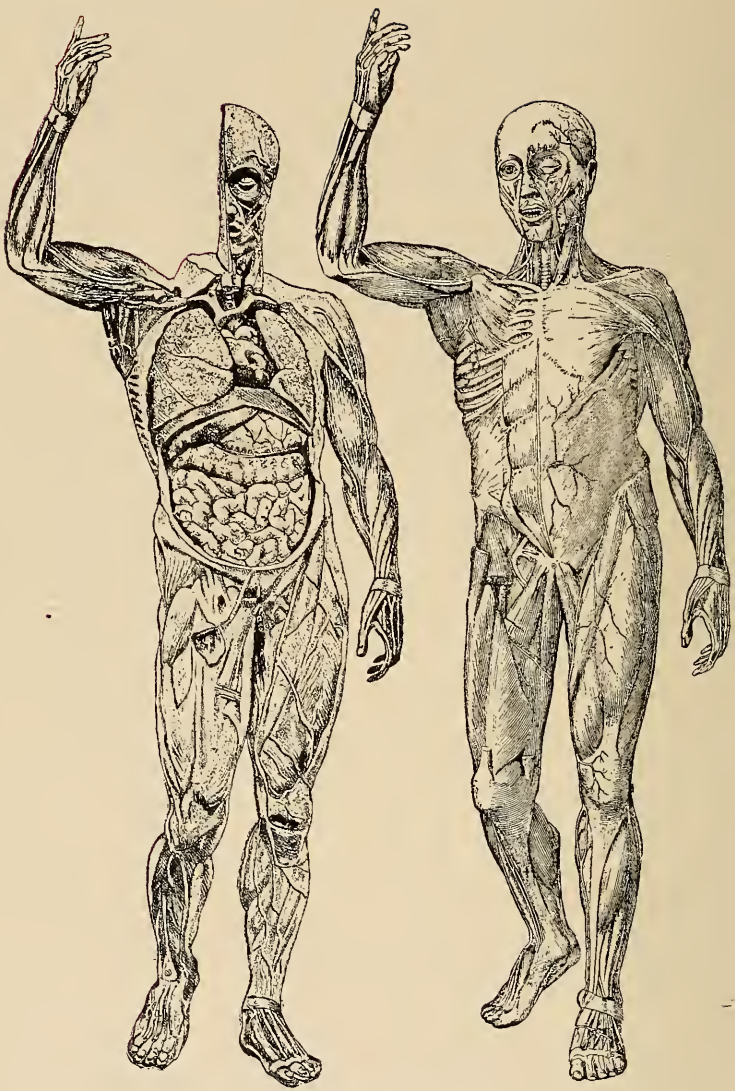


No. 5. MODELS OF MAN, ENTIRE AND PARTIALLY DISSECTED.

organs. A portion of the brain is removable showing the convolutions of the cerebellum, medulla oblongata and the origin of the cranial nerves. The model shows also the organs of digestion, circulation, respiration, etc., which being of elastic material, are very readily removed. No genital organs. (Deyrolle.)

The external muscles and other structures of importance to the student of artistic anatomy are especially well portrayed on this manikin.
Price, with pedestal, $150.
Same, but with dissectible heart, $175.

6 **MODEL OF MAN, Viscera Non-dissectible.**

This is the same model externally as No. 5, except that the internal organs are not removable. Sections of the dorsal and ventral walls of the body remove, disclosing the viscera in situ.
Price, with oak pedestal, $125.

7 **MODEL OF WOMAN,**

Of the same size and attitude as the Venus de Medici, showing the superficial muscles, veins, and arteries, and internal and external generative apparatus. Anterior wall of abdomen is detachable, disclosing all the thoracic and abdominal viscera and the organs of generation, all of which are removable; the deeper muscles, nerves and blood-vessels are represented. (Auzoux No. 5.)
Price, $320; price, duty free, $240.

8 **MAN,**

100 cm. (39 inches) high, on pedestal. Viscera are completely dissectible, brain removes, and muscles of left arm and leg remove in many pieces. Every part lettered to correspond with printed description.
Price, $90.

THE TORSO,

9 Life size, separating into thorax and abdomen. The lungs and heart dissect as in No. 91; the abdomen as in No. 105. Price, $45.

10 **TORSO,**

Twelve inches long, lying on pedestal, opened ventrally, showing larynx, trachea, veins, heart, lungs, mesentery, stomach, liver, intestines, etc. Lobe of one lung, and intestines are separable. (For Primary Schools.)
Price, $5.

11 **TORSO,**

Supplementing the above, the organs being exposed by a dorsal section.
Price, $5.

12 **TORSO, with Head,**

Size of large man. Viscera of thorax and abdomen are entirely dissectible; the heart opens; calvarium is removed disclosing brain, which separates into ten parts. Model is represented prone, the head on a cushion; and the various organs held in situ by gravity, No genitalia.
Price, $70.

13 **TORSO OF VENUS,**

Natural size, arranged as above. The viscera are removable.
Price, $70.

14 **TORSO OF YOUTH,**

(No head), life size, erect upon pedestal. Viscera of chest and abdomen exposed and dissectible. Dr. Bock's model.
Price, $25.

15 **TORSO with Head, of Boy of Fifteen,**

Lying on left side. The body wall is cut away through the median line exposing:

1st. The innervation of the brain and spinal column, and the origin of the spinal nerves.

2d. The respiration, by the nasal fossæ, the trachea, the lungs and bronchial tubes.

3d. The digestion, by the buccal cavity, salivary glands, œsophagus, stomach, liver, pancreas, and intestines from the pylorus to the rectum.

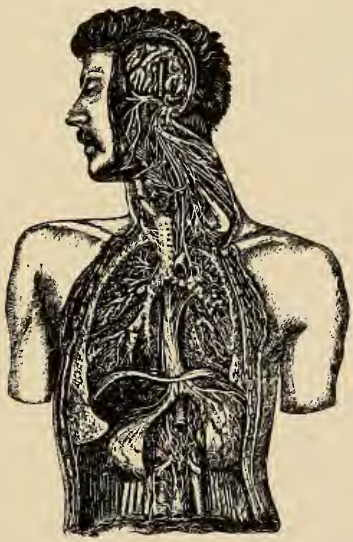
4th. The circulation, by the heart and pulmonary vessels.

5th. The genito-urinary organs. A beautiful preparation, upon which all the necessary dissection has already been executed. The coloring is artistic. (Deyrolle.)
Price, in papier maché, $60; in wax, $350.

NOTE—This model has been adopted by the Officers of Public Instruction of Paris.

15b **TRUNK OF MAN,**

Life size, in wax. Open from the cranium to the upper part of the kidneys. For the demonstration of the left pneumo-gastric nerve from its exit from the skull, throughout its entire course. The spinal nerves, the glosso-pharyngeal, trigeminal, hypoglossal and great sympathetic nerves, and the solar plexus are also shown in detail. The heart is removed, the lungs are dissected, the stomach is opened, and the liver is sectioned. See cut. This model is protected by a glass case, size 94 cm. x 70 cm. (37 in. x 27½ in.) A most beautiful model of a masterly dissection.
Price, $195.



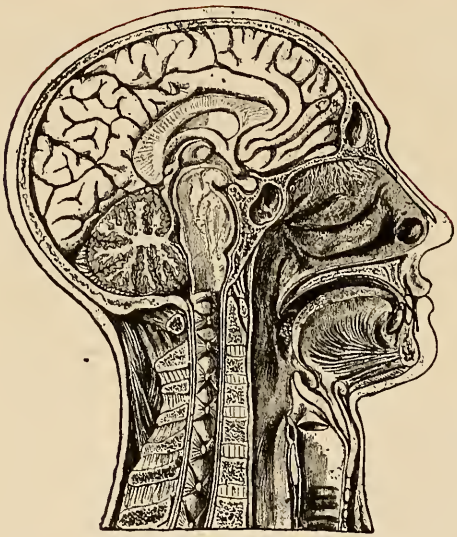
No. 15b. TRUNK OF MAN

THE HEAD.

16 **HALF OF HEAD,**

Enlarged, revealing in their smallest details all parts found at the base of the skull, the divisions and anastomoses of the fifth and seventh pair of nerves, the nervous ganglia, the eye, ear, nasal fossæ, mouth, tongue, pharynx and larynx, together with the muscles and bloodvessels.
Price, $100. Price, duty free, $72.

16b **MEDIAN SECTION OF THE HEAD AND NECK,**



No. 17. MEDIAN SECTION OF HEAD AND NECK.

Showing the nasal fossæ with the turbinated bones, the tongue with its papillae, the interior of the mouth with the various muscles, the larynx, epiglottis, vocal cords, etc. This piece is mounted upon a plaque measuring 25 cm. x 30 cm., and is accompanied by an explanatory legend.
Price, $14.

18 **HEAD,**

Natural size, vertically bisected; one half showing muscles and median section; the other, the bones, nerves and bloodvessels supplying the teeth, etc. One half of brain is removable and dissects into four parts; muscles of neck are exposed. Revolves on standard.
Price, $22.

19 **HEAD,**

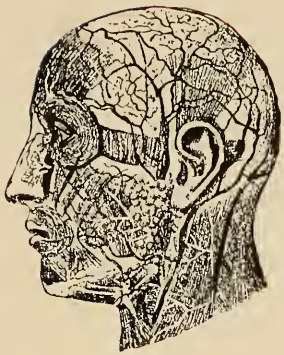
With muscles, natural size. Revolving upon a standard.
Price, $10.

20 HALF HEAD,

Vertical section, showing bones of the skull, cerebrum, cerebellum, medulla oblongata, spinal cord, nasal fossæ and sinus, trachae, tongue, lips, œsophagus, etc.
Price, $5.

21 HALF HEAD,

With muscles, veins, arteries and glands. Mounted on a plaque. (See cut.)
Price, $7.



No 21. HALF HEAD.

22 DR. BOCK'S MODELS,

A Head with muscles, blood vessels and nerves.
Price, $5.

B Head showing skull partially opened, orbital fossa, upper and lower jaw.
Price, $5.

C Median section of head, showing section of brain, nose, mouth, larynx and pharynx.
Price, $5.

LIMBS AND ARTICULATIONS.

23 MUSCULAR ARM WITH HAND.

Superficial muscles dissecting into four parts; natural size.
Price, $10.

25 MUSCULAR LEG, HIP AND BUTTOCK OF ADULT MAN,

Showing all the external muscles, veins and arteries. With pedestal. from which it removes.
Price, $15.

26 MUSCULAR LEG,

Half natural size, dissecting into nine parts.
Price, $15.

28 KNEE,

Vertical section, on pedestal. Complete anatomy lithographed in colors.
Price, $2.25.

29 HAND,

Twice nature, (Auzoux No. 30), with muscles, tendons, and tendinous sheaths disposed in such manner as to show the action of the interossei and lumbricales muscles. The arteries, veins nerves, Pacinian corpuscles, and a portion of the skin with its various layers are also represented.
Price, $65.
Price, duty free, $48.

30 MUSCULAR HAND,

Mounted on pedestal.
Price, $3.50.

31 HAND, Greatly Enlarged,

Skin removed. Lateral digits with muscles, tendons, arteries, veins and nerves. Middle finger with layer of adipose tissue, the sub-cutaneous blood vessels, and the nerve plexus of the pulp. Model rotates on standard. Height, including pedestal, 43 cm. (Deyrolle.)
Price, $16.

No. 31. ENLARGED HAND.

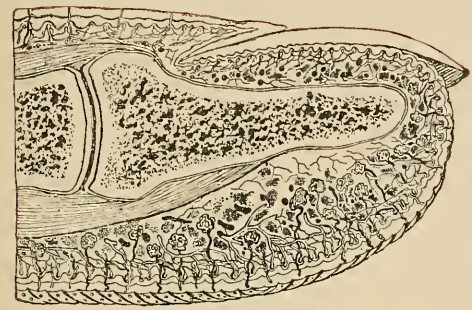
32 MUSCULAR FOOT,

Mounted on pedestal.
Price, $4.

33 FOOT,

Longitudinal section, on pedestal, showing bones, muscles, etc., in situ. Beautifully lithographed in colors.
Price, $2.25.

34 SECTION OF THE EXTREMITY OF A FINGER,



No. 34. SECTION OF FINGER.

Greatly enlarged with the successive layers of the skin, the capillaries, the nerves, tactile corpuscles, sudoriforous glands and ducts, nail, phalanx, etc.

Mounted on pedestal, 32 cm. x 24 cm., with explanatory chart.

Price, $12.

THE ARTICULATIONS.

Prof. Bock's series of models, of plaster of Paris, natural size, accurately colored. Each model rests upon a slab and is lettered to correspond with a printed description.

A ARTICULATION AND LIGAMENTS OF THE HIP JOINT,

On slab.

Price, $2.50.

B ARTICULATION AND LIGAMENTS OF KNEE JOINT,

On slab.

Price, $2.50.

C ARTICULATION AND LIGAMENTS OF ELBOW JOINT,

(Extended), on slab.

Price, $1.75.

D ARTICULATION AND LIGAMENTS OF ELBOW JOINT,

(Flexed), on slab.

Price, $1.75.

E ARTICULATION AND LIGAMENTS OF HAND AND WRIST,

On slab.

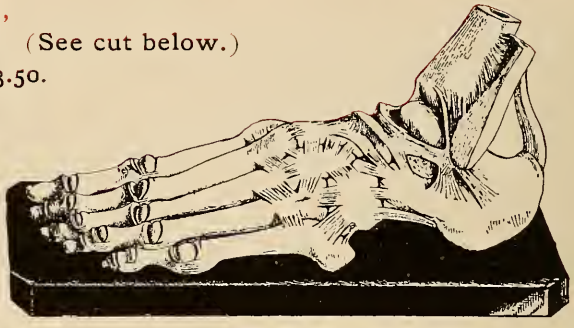
Price, $2.75.

F ARTICULATION AND LIGAMENTS OF SHOULDER,

On slab.

Price, $2.25.

G ARTICULATION AND LIGAMENTS OF FOOT AND ANKLE,
On slab. (See cut below.)
Price, $3.50.



No. G. FOOT AND ANKLE.

BRAIN AND SPINAL CORD.

35 DEVELOPMENT OF HUMAN BRAIN,
Series of eight wax models, after the researches of Prof. His. (Ziegler.)
Price, $95.

36 DEVELOPMENT OF SULCI AND CONVOLUTIONS
Of the cerebral hemispheres in the human fœtus. Series of fourteen wax models of seven stages of embryonic growth, from 5 to 9 months. (Ziegler.)
Price, $32.50.

37 SULCI AND CONVOLUTIONS
Of cerebral hemispheres of an adult man; two wax models, including the entire brain, natural size, and a median section. (Ziegler.)
Price, $17.50.

38 BRAIN OF MAN,
Greatly enlarged. After dissections by Dr. Luys. Every discovery in the anatomy of the cerebrum, cerebellum, pons and upper part of the spinal cord is represented, and by means of an elaborate system of removable parts, can be demonstrated. The finest dissecting model made. (Auzoux.)
Price, $100; Price, duty free, $72.

39 ENLARGED SECTIONS OF THE BRAIN,
For the class-room. These are mounted on handsome pedestals and are arranged to be hung like charts. From their large size (40 cm. x 30 cm.), the smallest details are

No. 39 I. BRAIN. LATERAL ASPECT.

Copyright, 1902, by Charles H. Ward.

No. 39 II. BRAIN. LONGITUDINAL SECTION.

visible at a considerable distance from the demonstrator. Each model is lettered to correspond with a printed description. Sections are illustrated on succeeding pages.

I BRAIN. LATERAL ASPECT,

Showing the exterior of the cerebrum and cerebellum with their convolutions, the pons and medulla oblongata with the roots of the cranial nerves.

II BRAIN. MEDIAN LONGITUDINAL SECTION,

The convolutions of the internal face of the cerebral hemisphere, the corpus callosum, the ventricles, a section of the cerebellum disclosing the arbor vitæ, sections of the pons and medulla, the optic and olfactory nerves, the commissure, corpora quadrigemina, etc., are shown.

III BRAIN. HORIZONTAL SECTIONS,

IV Exposing the frontal horns of the fifth ventricle, the anterior pillars, choroid plexus, occipital horns, etc., aiding greatly in understanding the form and relative positions of the several parts.

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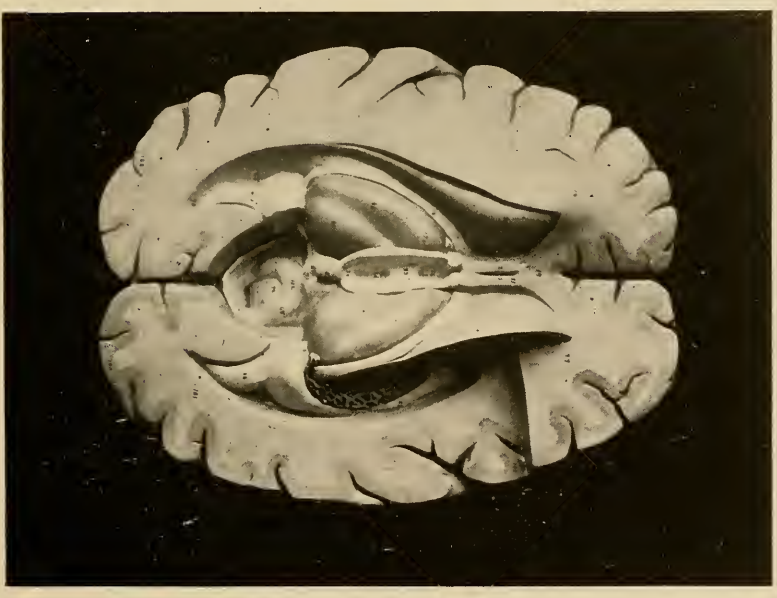
No. 39 V. TRANSVERSE SECTION.

No. 39 III. HORIZONTAL SECTION.



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No. 39 IV HORIZONTAL SECTION

V BRAIN. TRANSVERSE SECTION,

Exposing the lateral ventricles, and supplementing the preceding sections.

These models are recommended for their accuracy and ease of demonstration.
Price of the series of five models, $45.
Price of individual models, $10.50.

40 BRAIN,

Natural size, separating into ten parts.
Price, $6.50.

41 SERIES OF FIVE MODELS OF BRAIN,

(Dr. Bock's plaster models), all lettered to agree with description.

A BRAIN, Dorsal Aspect,

Mounted on plaque.
Price, $3.

B BRAIN, Sagittal Section; on Plaque.

Price, $3.

C BRAIN, Horizontal Section

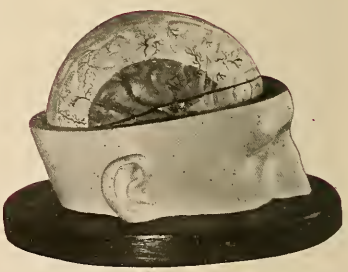
Through ventricles; on plaque.
Price, $3.

D BRAIN, Ventral Aspect,

With origins of spinal nerves; on plaque.
Price, $3.

E SECTION OF HEAD, with Entire Brain,

Which removes and separates into three parts. The interior of skull is dissected revealing the internal ear, the optic nerve, muscles of eye, etc.
Price, $10.



No. 43 E. BRAIN IN HEAD.

42 ENTIRE SKULL, with Distribution of Cranial Nerves.

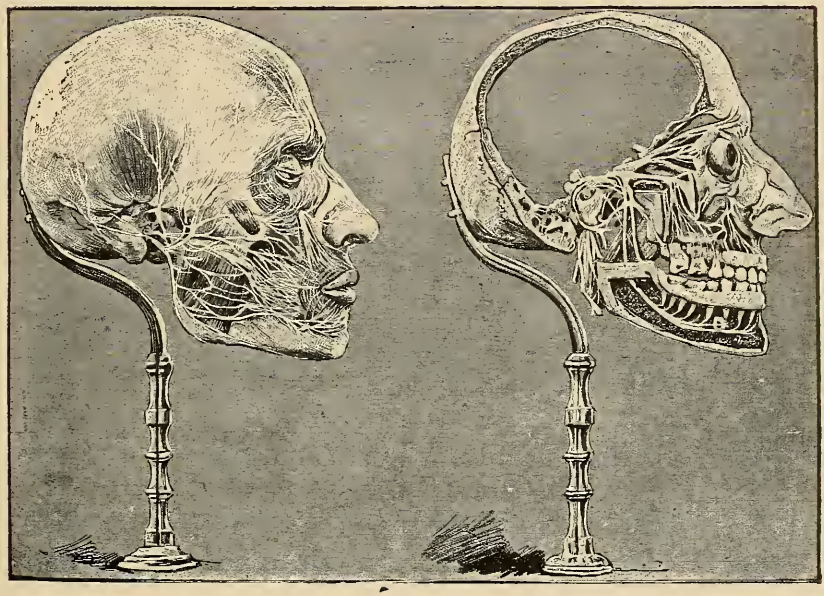
Horizontal and Vertical sections permit a view of the dura mater, the exit of the nerves through the cranial foramina, the nasal fossæ and the distribution of the olfactory

CHARLES H. WARD · ROCHESTER, N.Y. U.S.A.

nerve, and the sinuses. The internal ear is dissected, a section passing through the ear and the stylo-mastoid foramen is removed, disclosing the auditory ossicles, the eye-ball and the facial nerve. The jaws are dissected exposing the roots and pulp of the teeth with their innervation and blood supply. Mounted on ornamental brass standard under glass.
Price, $100.

42b CRANIAL NERVES,

As above, but represented on two Half-Skulls, mounted separately on standard and under glass. This preparation is faultless in execution and of great practical value, as will be seen from the illustration.
Price, $85.



No. 42b. TWO HALF-SKULLS WITH CRANIAL NERVES, ETC.

43 VOLUMETRIC MODELS OF THE BRAIN.

This series of Cube Models of the Brain is a duplicate of an exhibit in the Neurological Room of the Model Anthropological Laboratory, at the World's Columbian Exposition, Chicago, 1893. In repoducing these models it is with the belief that the visual method of emphasizing certain fundamental facts of brain anatomy and physiology is the best yet devised.

These models illustrate: (1,) the amount of water; (2,) white matter; (3,) gray matter; and (4,) solid matter in the average brain. Also, (5,) average weight of male, and (6,) female brains; (7,) weight of brain of the Russan writer, Tourgueneff; (8,) the smallest recorded weight of the male, and (9,) of the female brain compatible with intelligence; (10,) the lowest weight of the male; and (11,) of the female brain, compatible with life; (12,) the weight of the encephalon of an idiotic infant; and (13,) a chart showing the actual superficial area of the entire cerebral cortex of man compared with a superimposed card of area equal to that portion of the cortex sunken between the gyri.

By comparison of the cubes, the difference in volume between the average male and female brain, the relative mass of white and of gray matter, etc., is readily appreciated.

The series includes twelve cube models and one square chart each with complete explanatory label on heavy card-board.

Price, $10.

44 BRAIN OF FŒTUS, Natural size.

Price, $1.50.

DR. WM. FULLER'S MODELS OF THE BRAIN.

The following series of models are made under the personal supervision of Dr. Fuller, directly from his dissections. They were awarded a diploma at the World's Columbian Exposition, Chicago, 1893, and have been purchased by the universities of Chicago, Michigan and California; McGill college, Montreal, and many other institutions throughout the country. Each model illustrates certain points in brain anatomy, and taken together, they constitute a complete resumé of the anatomy of this region. They are especially designed for individual study, and at the very low price offered, are believed to be superior in point of simplicity, accuracy, and practicability to any models of foreign manufacture.

To those wishing more complete descriptions and illustrations of these models than here given, my special CATALOGUE OF THE FULLER BRAIN MODELS, will be mailed on request.

DR. FULLER'S BOOK, "ARCHITECTURE OF THE BRAIN"

Was written primarily as an accompaniment to the models, and its use is recommended with them.

Quarto 190 pages. Half leather binding; all illustrations the actual size of the parts shown.

Price, $3.50 net. Postage 22 cts.

SET No. 1. STUDENT'S SERIES.

Composed of the following models, which may be purchased separately at prices affixed. These models are all of the exact size of the part shown.

F 01 THE ENTIRE BRAIN,

Showing its divisions, convolutions, fissures and cranial nerves.

Price, $3.

F 02 THE UPPER SURFACE OF THE CORPUS CALLOSUM,

Striæ, raphe, line of decussation of the corpus callosum with the internal capsule and corona radiata with a schematic representation of the internuncial fibres.

Price, $3.

F 03 THE ANTERIOR MEDIAN FISSURE,

Genu of the corpus callosum, septum lucidum, fornix, splenium of the corpus callosum and posterior median fissure.

Price, $3.

F 04 THE ANTERIOR MEDIAN FISSURE,

Genu of the corpus callosum, septum lucidum and fifth ventricle anterior pillars of the fornix, velum interpositum, fornix and corpus callosum reflected.

Price, $3.

F 05 THE THIRD VENTRICLE,

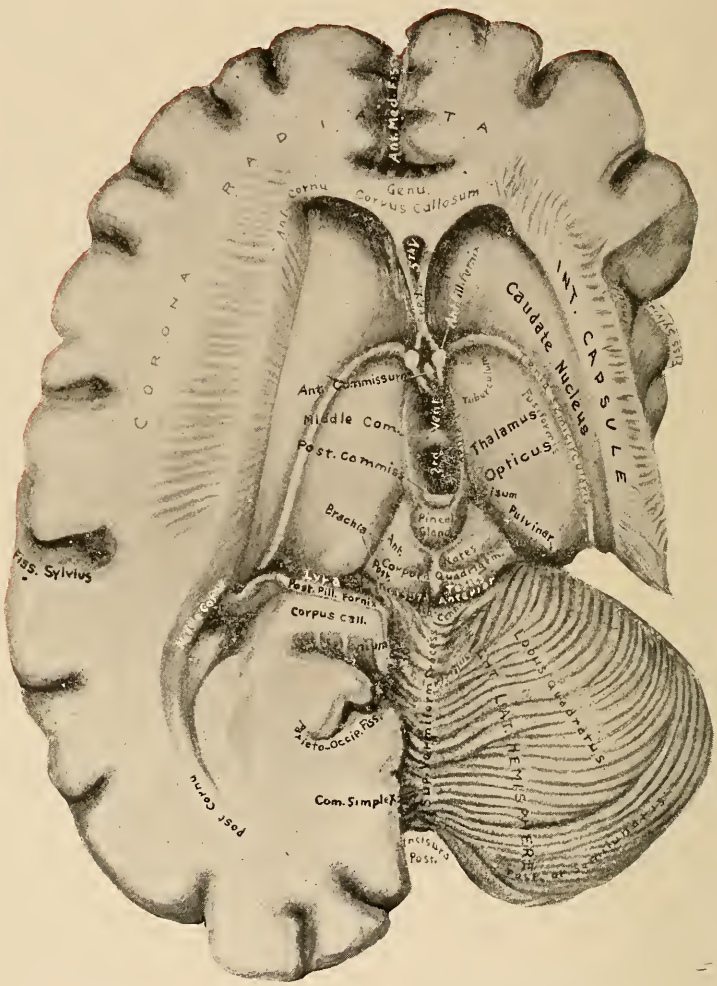
Pineal gland, corpora quadrigimena, basal ganglia, cerebellum, posterior extremities of the caudate nucleus, and tænia semi-circularis. Illustrated on next page.

Price, $4.

F 06 HEMISPHERE OF THE CEREBRUM,

Showing the hemispherical ganglion, its hilum and a transsverse section of the commisures and of the crus cerebri.

Price, $2; Price, the six pieces in compartment chest, $15.



F 05. SECTION OF BRAIN. STUDENT'S SET, DR. FULLER'S MODELS.
(The lettering does not appear on the model.)

SET No. 2. LATERAL DISSECTIONS OF A HEMISPHERE.

F 07 SHOWING THE INSULA, VAULT, INTERNAL CAPSULE, CORPUS CALLOSUM,

Internuncial fibres and external longitudinal commissure.

F 08 SAME AS F 07 WITH THE INSULA

And the sub-convolutional white layer which subtends its gray substance and the claustrum removed.

F 09 SAME AS F 08 WITH THE OUTER FIBRES

Of the external capsule removed, showing the putamen.

F 10 SAME AS F 09 WITH THE LENTICULAR NUCLEUS

And the upper portion of the crusta fibres of the internal capsule removed, showing the anterior and posterior distribution of fibres from the thalamus; longitudnial commissure fully exposed.

F 11 SHOWING THE ANTERIOR COMMISSURE

Of the third ventricle, divided ends of the crusta and fillet, a portion of the caudate nucleus, nucleus of the tegmentum and the fibres of the corpus callosum and internal capsule.

F 12 AN INTRA-HEMISPHERICAL VIEW

Of the internal surface representing the fissures as depressions and the convolutions as projections. Showing the laminæ of the corpus callosum, superior longitudinal commissure, portion of the lining membrane of the lateral ventricle, fornix and hippocampi, concentric layers composing the thalamus and relative positions of the thalamus, fillet, crusta and anterior commissure of the third ventricle.

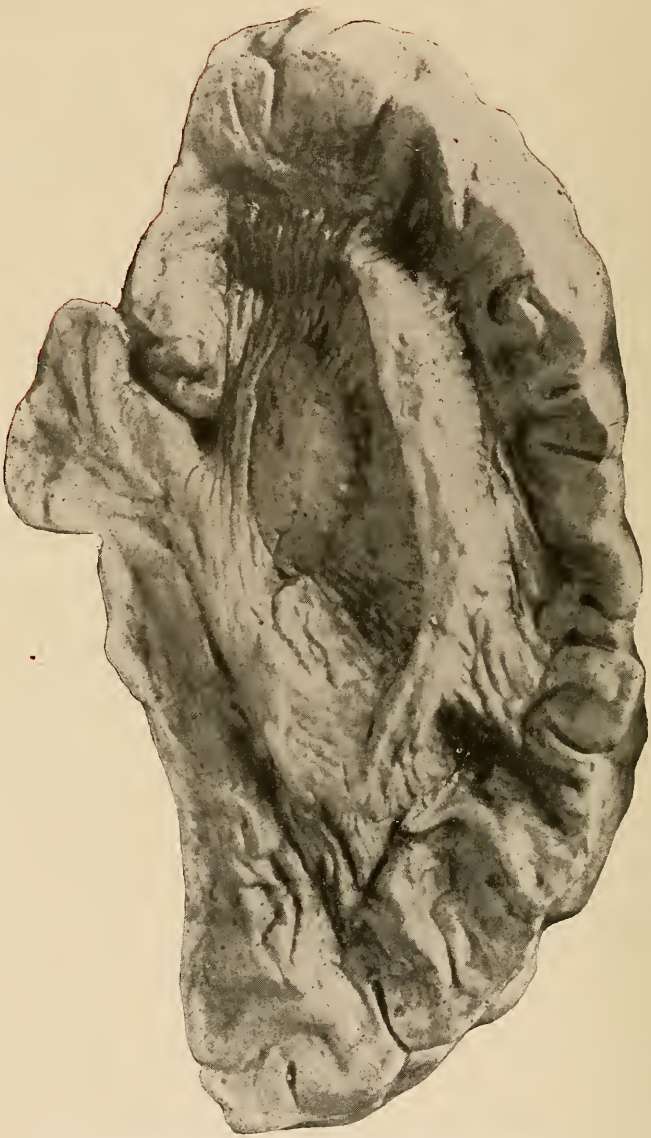
Price, the six models on a plaque, $15.

Pieces of this set are not sold separately.

SET No. 3. DISSECTIONS OF THE INTERMEDIA.

Price, six pieces, $25.

This set consists of six models (Nos. F 13-F 18) showing consecutive dissections of the intermedia, illlustrating the three sections into which it is divided and all sub-divisions, tracts, commissures, nerves, etc. On account of the innumerable parts that make up this body, an adequate description in limited space is impossible. The models with all of these parts named are illustrated in a special catalogue which gives a good idea of the plan and scope of the set. This catalogue will be mailed upon request.



F 10 LATERAL DISSECTION OF A CEREBRAL HEMISPHERE.
From Set No. 2. Dr. Fuller's Models.

SET No. 4. TOPOGRAPHICAL SECTIONS OF THE BRAIN.

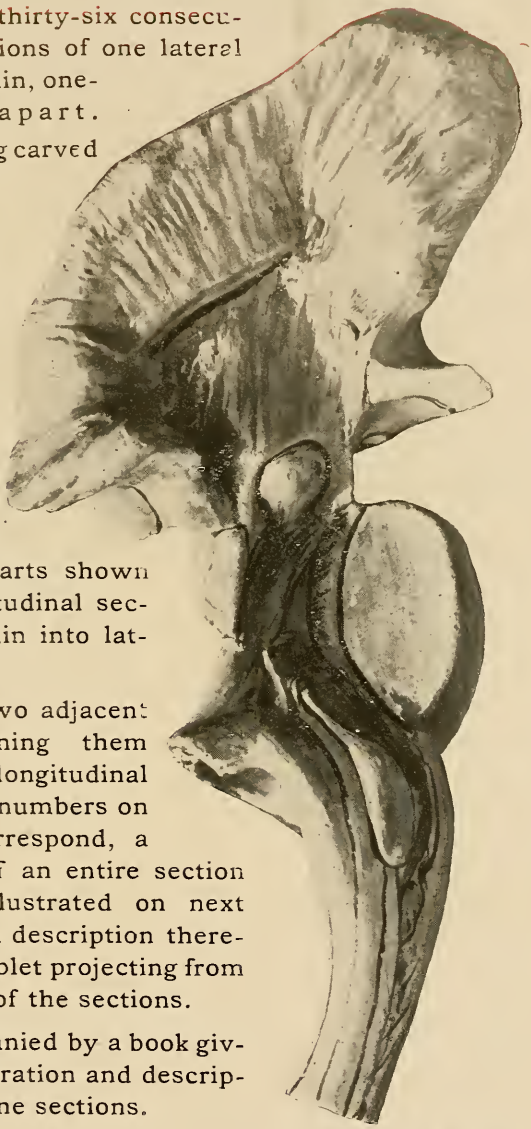
This set consists of thirty-six consecutive transverse sections of one lateral half of the entire brain, one-sixth of an inch apart. These sections, being carved from solid wood, are practically indestructible. They are numbered, and when assembled together present the size, shape and external appearance of the brain, upon which are marked the motor centers, convolutions and fissures, also the parts shown by a median longitudinal section dividing the brain into lateral halves.

By removing any two adjacent sections and opening them toward the great longitudinal fissure, so that the numbers on opposite plates correspond, a complete picture of an entire section of the brain as illustrated on next page is given, with a description thereof, printed upon a tablet projecting from the inferior surface of the sections.

Each set is accompanied by a book giving a half-tone illustration and description of each one of the sections.

Price, thirty-six sections and text, in a neat mahogany case, $25.

Sections are not sold separately.



DISSECTION OF THE INTERMEDIA FROM SET No. 3.
Dr. Fuller's Models.

SECTION No. 32. OF SET No 4.
The ENTIRE section is formed by placing side by side the Anterior face of section 31 and the Posterior face of section 32.

45 MEDULLA OBLONGATA,
Enlarged, showing the passage of the fibres of the spinal cord across the medulla, the pons, and the cerebral peduncles to within the cerebrum, also the origin of the cranial nerves, the parts adjacent to the medulla, the peduncles of the cerebellum, et cætera. (Auzoux.)
Price, $55; price, duty free, $38.50.

46 CEREBELLUM AND ENTIRE SPINAL CORD,
With anterior and posterior roots of all the spinal nerves. (Auzoux.)
Price, $20; price, duty free, $15.

47 DURA MATER,
With portion of base of skull, (twice natural size) exhibiting this membrane in its entire extent, its folds, all the venous sinuses, glands of Pacchioni, etc. (Auzoux.)
Price, $28; price, duty free, $21.

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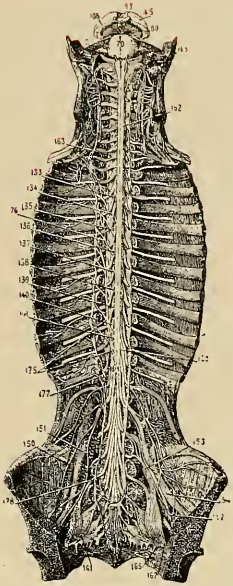
48 MODEL OF SPINAL CORD.

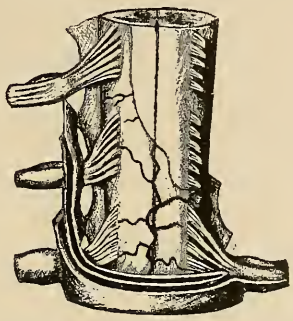


No. 48. SPINAL CORD.

By a section of skull, vertebral column and ribs, and pelvis, are disclosed the cerebellum, the medulla and the spinal cord to the sacrum, with all the fasciculi leading from thence to the lower portion of the body. The great sympathetic nerve with its ganglia is represented upon one side of this model which is of life size and mounted on a handsome pedestal. Nothing finer can be desired.

(Deyrolle.)

Price, $40.



NO. 49. SECTION OF SPINAL CORD

49 SPINAL CORD,

Section of, enlarged, (23 x 24 cm.) showing the origin of the spinal nerves and their ganglions, the membranes, dental ligament, etc. (Deyrolle.)

Price, $14.

ACTUAL HUMAN BRAIN.

HARDENED IN FORMALDEHYDE.

I am pleased to offer to my patrons a limited number of HUMAN BRAINS carefully prepared by an experienced Neurologist. These are hardened in formol without distortion, and include the roots of the cranial nerves and of the spinal cord.

Especially valuable to the advanced student are the data accompanying many of these specimens, noting AGE, SEX AND CAUSE OF DEATH, facts of importance in the study of this organ, but seldom obtainable with purchased material.

Price, boxed, packing saturated with formalin, $6.

Price, boxed, including glass specimen jar, 7⅝ x 8, and formalin solution to preserve brain indefinitely, $8.

(If sent without jar, brain should be transferred to a 2% formalin solution, in glass or crockery jar immediately upon receipt.)

PHYSIOLOGICAL MODELS OF THE CENTRAL NERVOUS SYSTEM.

Designed by DR. GAYLORD P. CLARK, PROFESSOR OF PHYSIOLOGY, MEDICAL DEPARTMENT, SYRACUSE UNIVERSITY.

These models of the Nervous System are designed to aid in the teaching of the grouping and chaining together of the neurones. They consist of ten wooden sections shaped and painted to represent typical sections through the central nervous system enlarged twelve diameters. In Model A these sections are mounted in three series on a revolving iron standard; one series representing the spinal cord with spinal and sympathetic ganglia; one the medulla oblongata, with wire for cerebellar cortex, (illustrated on next page); one the brain above the medulla with wires representing the cerebral cortex. In Model B a similar set of sections is mounted in one series on a fixed iron standard.

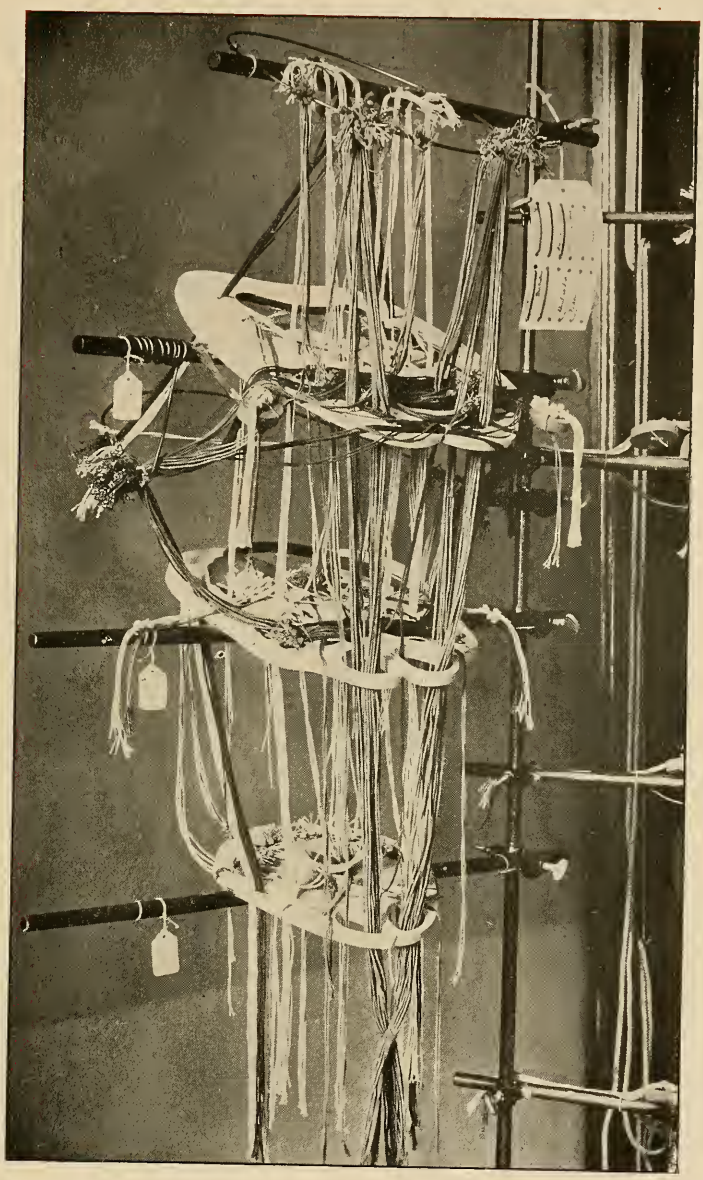
The sections are cut out in the locations of principal nerve-tracts. Bundles of different colored cords are used to represent the tracts, the colors and shades of the violet end of the spectrum being chosen for afferent and ascending fibres, those of the red end for descending and efferent fibres, the lighter shades being reserved for peripheral, the darker for central, fibres. The ends of the cords are knotted and frayed to represent cell bodies, dendrites, axones and terminals.

In using these models it is customary to begin on Model A, with the three sections of the spinal cord, and introduce the various bundles representing afferent, central and efferent nerve tracts as the student studies the structure of the spinal cord. A similar method is followed with the medulla oblongata and the brain.

Finally the whole nervous system is reviewed and the complete connections of the neurones illustrated by the use of Model B, in which all the sections are mounted in one series.

MODEL A. Sections arranged in three series upon standard, with revolving base, Price, $~~105.~~ 110.

MODEL B. Sections arranged upon one standard; base on castors. Price, $~~85.~~ 100.



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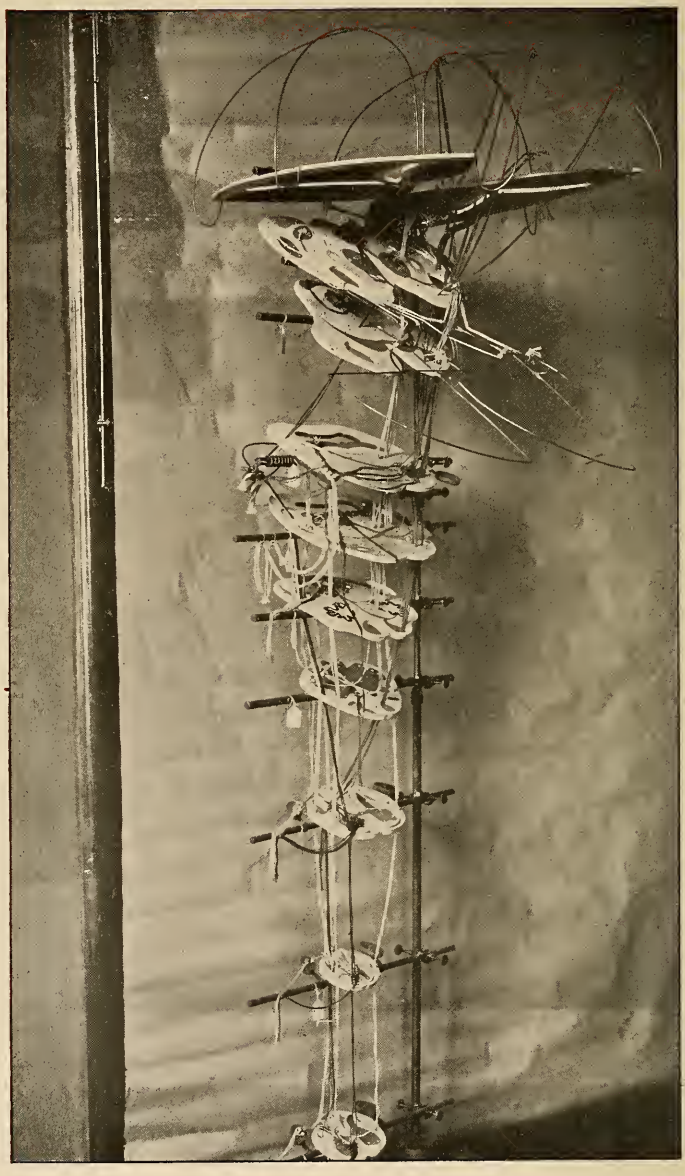
No. A. MEDULLA OBLONGATA.

The two Series representing Brain and Cord are not shown. Dr. Gaylord P. Clark's Model.



Copyright, 1902, by Charles H. Ward.

No. B. ENTIRE CENTRAL NERVOUS SYSTEM.
Dr. Gaylord P. Clark's Model.

PHYSIOLOGICAL MODELS.

Designed by W. GILMAN THOMPSON, M. D., Professor of Medicine in Cornell University Medical College: late Professor of Physiology, Medical Department, University of the City of New York.

CEREBRAL HEMISPHERE,

Greatly enlarged (4 feet long,) showing both external and and mesal surfaces, with fissures and convolutions, corpus callosum, etc., carefully outlined in colors. The lobes, various landmarks, and motor areas are drawn in chalk on the external surface before the class and can be subsequently rubbed out. The mesal surface removes, disclosing the interior of the hemisphere with the lenticular and caudate nuclei, the thalamus and the corpora quadrigemina. The nerve fibres from the medulla, etc., are represented by variously tinted cords passing up from beneath, between the several ganglia or nuclei and radiating out to the cortex, which has its localized areas differentiated by colors, the nerve fibres agreeing in color with the areas to which they are distributed. The motor and other areas being localized upon the outer surface, the model is turned about, the mesal surface removed, and the inner surface of the cortex with its radiating fibres shown to the class. Association fibres are omitted to avoid complexity, but may be shown during the lecture by looping cords from one cortical area to another. The operculum and speech centre are particularly well understood from this model. It is used also to show the effect of localized lesions at the cortex which affect limited centres, in distinction from lesions near the ganglia, which include so many and diverse fibres. By covering the cortex with its canvas jacket representing the cranial bones, (upon which the sutures are indicated) trephining may be practiced. Upon removing a circular flap, the convolutions appear below and the hemisphere may be examined from within to ascertain whether the correct area has been uncovered. This model is very strong, water-proof, and weighs but a few pounds.
Price, complete, $100.

BRAIN MODEL,

Designed to show the relations of the nuclei to median perpendicular and horizontal sections. After Professor **W.**

Gilman Thompson. The two above mentioned sections, enlarged from photographs to 4 feet in diameter and painted to represent the gray and white matter, are brought together at right angles, forming a skeleton contour upon which arches are affixed, representing sections through the cortex at various levels. The nuclei and thalami are represented. From the cortical sections colored radiating fibres (cords) converge toward the nuclei and internal capsule. Additional cords may be added to represent connecting fibres. The centres for movement of muscles of the face, arm, leg, etc., are indicated by various colors. This model can be clearly demonstrated before a large class.
Price, $60.

THE MEDULLA, after Prof. W. Gilman Thompson.

The decussation and other distribution of the fibres in the medulla, always a difficult subject for students to understand, may be made clear by this model.
A portion of the upper cervical cord is shown with its fibres, which are continued to form the peduncles of the cerebrum and the peduncles of the cerebellum. On examining one of the peduncles, it is easy to note the colors of the bundles of fibres (twine) of which it is composed. Trace them back and find whether they decussate or not, and along which columns of the cord they run. Length of model, about 5 feet.
Price, $25.

THE MEDULLA, Another Model after Prof. Gilman Thompson.

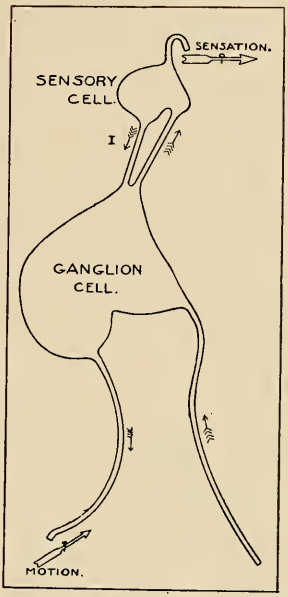
May be used in connection with the preceding. It represents the floor of the 4th ventricle, with the fibres forming the lateral and antero-lateral boundaries of the ventricle. The respiratory centre and deep origins of the cranial nerves arising from beneath the floor of the ventricle are indicated by colored paints upon the surface. Cross-sections of the medulla, showing the deep nuclei of the various nerves are given, and may be placed perpendicular to the model of the floor of the ventricle to show where the various sections are made. This model is especially useful for demonstrating the positions of the numerous nerve centres which are found beneath the floor of the 4th ventricle. Size, 2 feet x 4 feet.
Price, $24.

REFLEX ACTION, Automatic Model,

Representing motor, sensory and inhibitory nerves, a ganglion cell and a sensory cell, after W. Gilman Thompson. With this the demonstrator can illustrate normal, accelerated or retarded motion or sensation or complete inhibition as desired, with ease and precision. Model covers a pedestal 1½ x 3 feet. See illustration. Directions with model.
Price, $18.

MOTOR NERVE MODEL, After Prof. W. Gilman Thompson.

From a typical cross-section of the spinal cord, enlarged to 18 inches diameter, arise two motor nerves, (rods) crossing above to represent the decussation at the medulla, and capped with nerve-cells, indicating their termination in the cortex. The motor path in the lateral columns is continued toward the periphery, passing through nerve cells in the gray matter of the cord and outward to terminate in ganglion cells lying within striped muscular fibre. (Represented diagramatically.) The effect of lesions in various situations above or below the decussation may be pointed out, while the motor path being isolated is rendered more easily intelligible.
Price, $20.



AUTOMATIC MODEL TO ILLUSTRATE REFLEX ACTION.

SENSORY NERVE MODEL,

Similar in design to the above.
Price, $20.

THE EYE.

50 **DEVELOPMENT OF VERTEBRATE EYE,**

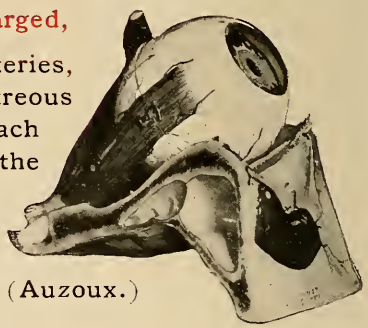
Series of nine wax models by Ziegler, after Prof. Manz's preparations.
Price, $27.

51 **EYE, WITH ACCESSORY ORGANS,**

Fully dissecting. A median section reveals the interior of the eyeball and permits the study of all the details, the cornea, iris, crystalline lens, sclerotic, choroid, etc. The muscles, eyelids, eyebrow, lachrymal apparatus, sinus, etc., are represented. Mounted on pedestal. Model 60 x 33 cm. A very fine, large model for the class-room.
Price, $70.

52 **EYE COMPLETE, Greatly Enlarged,**

(See cut). With the muscles, arteries, veins, nerves, membranes, vitreous humor, crystalline lens, etc., each part detachable; and besides, the model shows the various microscopic layers of the retina, choroid coat and iris as demonstrated by the modern anatomists. (Auzoux.)
Price, $27; price, duty free, $19.



No. 50. EYE.

53 **EYE, VERTICAL SECTION,**

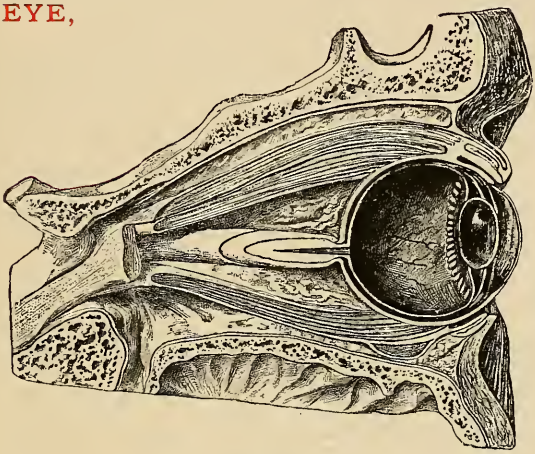
Internal half, with portion of orbit, exhibiting the muscles, arteries, veins, nerves, membranes, humors, disposition of the anterior and posterior chambers, conjunctiva, the structure of the eyelids, the Meibomian glands, the lachrymal points (puncta lachrymalis) and canals, the membrane of the Horner, etc.; and, as in the complete eye, it displays the microscopic details of the iris, choroid and retina. (Auzoux.)
Price, $27; price, duty free, $19.20.

54 **THEORETIC EYE,**

Demonstrating the reflexion of images on the retina, where they may be seen reversed as in nature. Diamater, 17 cm.
Price, $14.

55 **EYE, IN SOCKET, Greatly Enlarged.**
With venous and nervous systems, all the muscles, including the adjacent ones of the nose, lachrymal gland and sac, the nasal duct, bones of the orbit, the sinuses, nerves of nasal septum, cartilage of the upper lid, and the numerous layers of retina with their histological details greatly magnified. Completely dissecting.
Price, $18.

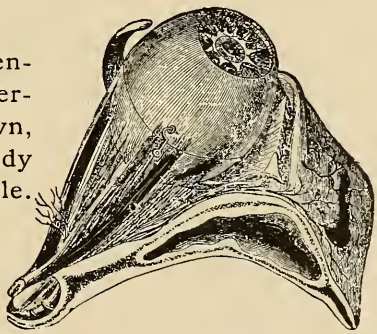
56 **EYE,**



Vertical section, greatly enlarged, showing muscles that rotate the eyeball, optic nerve, lens, iris, cornea, etc. Enlarged model mounted on pedestal, with description. Size, 28 x 21 cm. (Deyrolle.)
Price, $15.

No. 56. EYE, SECTIONED.

57 **EYEBALL,**
On upper portion of socket, enlarged twelve diams. The insertion of the recti muscles is shown, and the retina, lens, vitreous body and optic nerve are removable. Illustrated.
Price, $10.



No. 57. EYEBALL.

58 **EYEBALL, Enlarged Twelve Diams.**
Dissectible, and with enlarged microscopic details of the retinal layers. A good elementary model. (Bock.)
Price, $5.50.

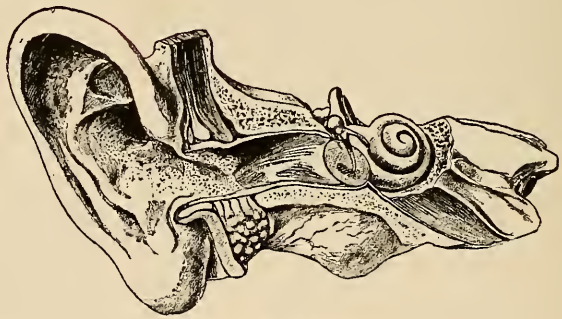
THE EAR.

59 **EAR, Greatly Enlarged,**

External ear with the pavilion complete and the external auditory meatus. By sections of the temporal bone are disclosed the middle ear, in which are found the ossicles and the orifice of the Eustacean tube, and the internal ear. The internal ear is seen with all its details of fenestræ, semi-circular canals, cochlea, membranous labyrinth, and auditory nerve. A section through the mastoid portion discloses the cells, beautifully represented. Model revolves on standard. Length, 60 cm.; height, 38 cm.
Price, $38.

60 **EAR, Smaller Model,**

And immovably mounted on pedestal. A fine French model.
Size, 40 x 25 cm.
Price, $14.



No. 60. EAR.

61 **EAR, (Temporal Bone 60 cm. long),**

Showing external, middle and internal parts in their smallest details, the expansion of the auditory nerves, etc. A preparation upon which have been reproduced all the minute details discovered by Corti, Rosenthal, Lewenberg and Reisner. This enlarged model facilitates the comprehension of the play of the ossicles, the functions of the round and oval windows, of the membranous canals, of the endolymph, of the perilymph, of the double flight of the cochlea, of the infundibulum, of the action of the air contained in the middle ear, and places within the understanding of all the marvelous mechanism of hearing. (Auzoux.) This is the

largest and most complete model of the ear made. The English translation of description covers eight closely typewritten pages.
Price, $64; price, duty free, $48.

62 **EAR, (Temporal, 30 cm. long),**

Offering the principal details reproduced upon the preceding. (Auzoux No. 22.)
Price, $32; price, duty free, $24.

62b **SECTION OF THE COCHLEA,**

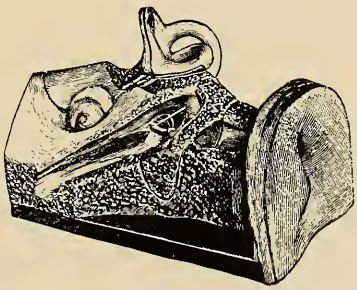
Of the human ear. An enlarged model upon which are clearly discernable the two scalæ, the columelle, the cochlear canal, the membrane of Reissner with its crest of insertion, the spiral ligament and all the minute details of the anatomy of the cochlea, so greatly enlarged as to be readily demonstrated.
Price, $27; price, duty free, $21.

63 **EAR, with External Conch.**

Separable into auditory ossicles, tympanum and labyrinth. The latter, on being opened, discloses the ampullæ, the cochlea, and the branching of the auditory nerves. Length, 55 cm.
Price, $15.

64 **EAR, 34 cm. long,**

With details as above, dissecting. Prof. Bock's model, in plaster of Paris. A reliable preparation for school use.
Price, $6.50.



No. 64. EAR, ENLARGED.

65 **DEVELOPMENT OF INTERNAL EAR**

Of the human embryo. Series of four beautiful models in wax after Dr. His, Jr. (Ziegler.)
Price, $30.

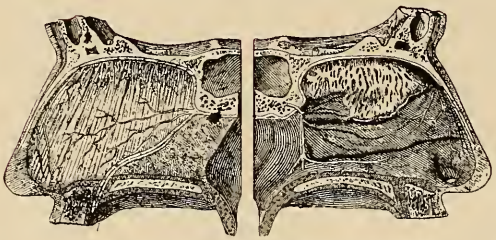
65b **ORGAN OF CORTI,**

Many times enlarged, after the studies of Dr. Merk in Graz. All the structural details are clearly shown.
Price, $40.
For the complete Osteology of the Ear, see pages 31-32.

THE NOSE.

66 **NOSE, Median Sections, Enlarged,**

With nasal septum represented on one, turbinals on the other, while on both are found the olfactory nerves covering the pituitary membrane. Lower part of nasal fossæ are shown to their termination at the arch of the palate. A very fine preparation. Length, 53 cm.; height, 25 cm. On pedestal. Price, $16.



No 66. ENLARGED SECTIONS OF NOSE.

67 **HORIZONTAL SECTIONS OF ENTIRE HEAD,**

(Prof. Frænkel) demonstrating the anatomy of the nose and all adjacent parts.
Price, $30.

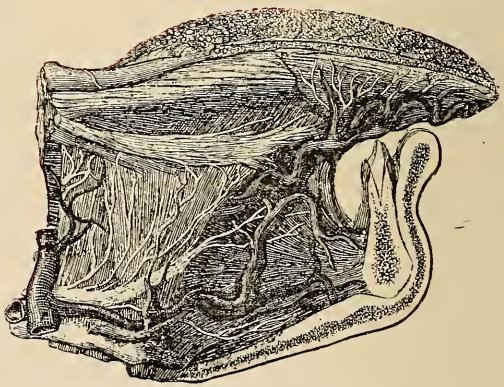
THE TONGUE.

68 **ENTIRE TONGUE, Enlarged,**

(Same proportion as larynx No. 79, p. 93, to which it it can be adjusted) showing in their smallest details the muscles, glands, nerves and blood-vessels. (Auzoux.)
Price, $50; price, duty free, $36.

69 **SECTIONED TONGUE, Greatly Enlarged.**

Median section showing the fibrous septum and the diverging muscular fibres; the dorsal surface with the mucous membrane prolonged to the frænum, covered by the papillæ circumvallatæ the fungiformes, filiforms, follicles and nerves. On the external surface the blood-vessels and nerve fasciculæ are seen. Mounted on



No. 69. TONGUE, EXTERNAL SURFACE.

revolving standard and pedestal. Size, 38 cm. long and 30 cm. high. (Deyrolle.)
Price, $17.

71 TONGUE, on Pedestal;
Dissecting. A simple, primary model.
Price, $3.

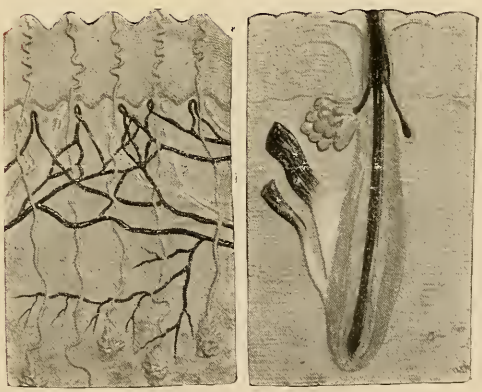
72 TONGUE, with Larynx,
Natural size. Dissecting into five parts. The muscles, cartilages, glands and blood-vessels are represented. See cut on page 94.
Price, $8.

THE SKIN.

73 SKIN,
Vertical section, enlarged 150 times, showing dermal layers, sebaceous and sudoriferous glands, hair follicles, bulb and shaft, tactile corpuscles, etc. Size, 30 x 30 cm. (11⅔ in. x 11⅔ in.)
Price, $5.

74 SKIN,
As above, Dr. Bock's model, in plaster of Paris. In high relief, very clear and distinct.
Price, $3.50.

75 SECTIONS OF SKIN,
Beautiful French models, one from the interior of the hand, greatly enlarged, showing the circulation, nerves and tactile corpuscles; the other demonstrating the structure of the hair follicles, and the erectores pilæ muscles. The two on one pedestal, size, 6¼ x 7⅞ inches. (Deyrolle.)
Price, $5.



Copyright, 1902, by Charles H. Ward.

No. 75. SECTIONS OF SKIN.

75b **THE SKIN,**

Two models, by Auzoux, showing the conformation and structure of this organ in all their details.
By far the most elaborate models on the market.
Price, $60.

THE TEETH.

76 **SECTION OF HUMAN MOLAR,**

Greatly enlarged, demonstrating the entire structure. One can clearly distinguish the enamel, the dentine, the dental pulp with its nerves and blood-vessels, and the cement. (Deyrolle.)
Height, 15 inches. Mounted on standard.
Price, $8.

No. 76.
SECTIONED MOLAR.

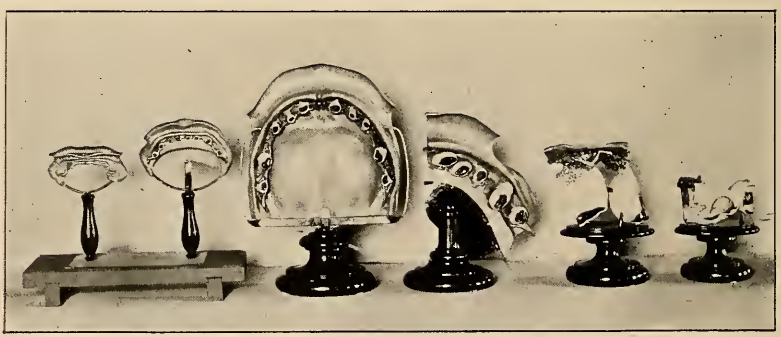
77 **RAMUS OF LOWER JAW,**

Enlarged, showing the complete dentition, with teeth in process of development and of decay; various sections of the teeth exhibiting structure, etc., together with the gum, lower lip, etc. (Dr. Bock.)
Price, $3.50.

78 **DEVELOPMENT OF HUMAN TEETH.**

Series of six wax models, by Ziegler, enlarged from dissections by Dr. Rose, including:

I Mouth of a fœtus 2.5 cm. long. The mouth-opening, a part of the lips and of the mucous membrane, and the tooth-ridges, are shown, magnified 25 times.



Copyright, 1902, by Charles H. Ward.

No. 78. DEVELOPMENT OF THE HUMAN TEETH.

Larger half-tone of this series of models will be sent on request.

II Same as above, of a fœtus 4 cm. long. The germs of the 10 milk teeth are apparent. Magnified 25 times.

III Represents the upper jaw of a fœtus 11½ cm. long, (14 weeks old), magnified 25 times.

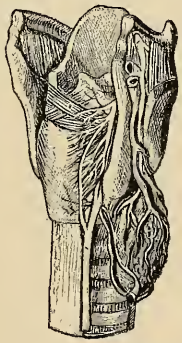
IV Left ramus of lower jaw of a fœtus 18 cm. long, (17 weeks old), magnified 25 times.

V The two incisor teeth of the right ramus of the lower jaw of a fœtus 30 cm. long (24 weeks old), in connection with the tooth furrow and a part of epithelium of the jaw. Enlarged 40 times.

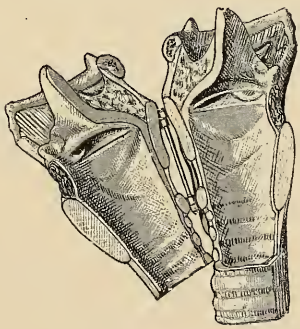
VI The 2nd milk molar and 1st permanent molar of the left ramus of the lower jaw of a fœtus shortly before birth. Magnified 15 times. Seven colors are used to differentiate the various tissues, and an exhaustive explanation of each model accompanies the series.
Price, six models, $56.

THE LARYNX.

79 **LARYNX, Enlarged Model,**
30 cm. (1 foot) long, all the muscles and cartilages are removable. This model shows the action of each muscle, of the vocal cords, and the mechanism by which the voice is produced. (Auzoux.)
Price, $50; price, duty free, $36.



No. 80. LARYNX ENTIRE.



No. 80. LARYNX OPENED.

80 **LARYNX, Greatly Enlarged.**
This organ is represented, with its vessels and nerves, as illustrated. By a median vertical section the interior is

opened, revealing the vocal cords. Mounted on a pedestal with revolving standard. Height, 30 cm.
Price, $17.

81 **LARYNX AND TONGUE,**
Being No. 79 combined with No. 68. (Auzoux.)
The largest and most detailed model of these organs to be had.
Price, $100; price, duty free, $72.

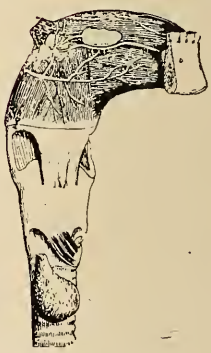
82 **LARYNX, Twice Enlarged,**
With cartilages, muscles, blood-vessels and nerves. (Auzoux.)
Price, $8.50; price, duty free, $6.

83 **LARYNX WITH BRONCHII,**
Giving the same details as above, but with the tracheal artery and the divisions of the bronchii to their smallest ramifications. (Auzoux.)
Price, $17.50; price, duty free, $12

84 **LARYNGEAL CARTILAGES and Vocal Cords,**
Twice enlarged. Movably articulated so as to demonstrate the glottis, the play of the vocal cords, and the mechanism for the production of sound. (Auzoux.)
Price, $8.50; price, duty free, $6.

85 **LARYNX, Twice Enlarged,**
Showing glands, nerves, veins, muscles and cartilages, etc. Dissects into five parts.
Price, $8.

86 **LARYNX with Tongue,**
Natural size. Dissects into five parts. (See cut.)
Price, $8.


No. 86. LARYNX AND TONGUE.

87 **LARYNX PHANTOM**
With open mouth; neck dissected posteriorly, showing the larynx, pharynx, soft palate, tongue, posterior nares, etc., together with the ascending rami of the inferior maxilla, to which the internal pterygoid muscles are attached. (Dr. Bock.)
Price, $10.

89 **LARYNX, Life Size, with Muscles.**
Price, $3.50.

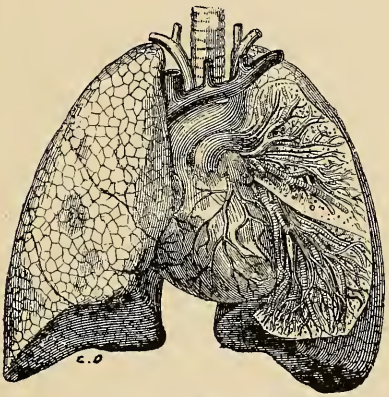
THE LUNGS AND THORAX.—Respiration.

90 **THORAX, Natural Size.**

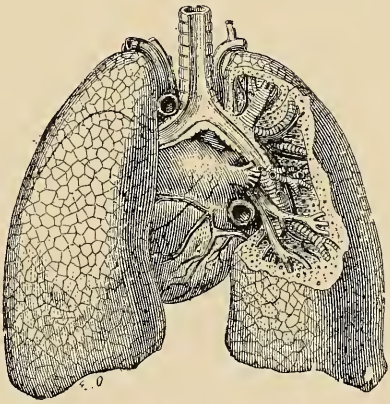
The lungs dissect and show the ramifications of the bronchial tubes, the bronchial cells, the arteries and veins. Heart (No. 99) is removable and diaphragm is shown.
Price, $18.

91 **LUNGS AND HEART.**

The heart is represented in situ, the pericardium removed. A section of the anterior part of the left lung is removed, disclosing the bronchii, the heart, the arteries and the veins; a similar section of the posterior face of the right lung reveals the base of the tracheal artery, the right and left bronchii with their principal ramifications, etc. Natural size, (28 x 30 cm.) mounted on standard on which it revolves. (Deyrolle.) See illustrations.
Price, $25.



No. 91. ANTERIOR FACE.



No. 91. POSTERIOR FACE.

92 **THE LUNGS, with Heart and Larynx,**

Life size, on pedestal. The heart and lungs are dissectible, showing the valves and chambers of the former, the cells and bronchial tree of the latter.
Price, $12.

93 **ARTIFICIAL LUNGS AND TRACHEA,**

Suspended in bell glass. By moving the diaphragm the capacity of the plural cavity is increased and diminished, with corresponding inflation and deflation of the lungs, which communicate with the outer air as in nature. Very useful in demonstrating the mechanism of respiration.

Price, $10.

Note.—For illustrating the movements of the ribs in respiration see actual thorax No. 57, page 40.

THE HEART AND BLOOD-VASCULAR SYSTEM.

94 **HEART CAVITIES (Atria) OF HUMAN EMBRYO.**

Series of three wax models showing details of development at 3rd and 6th months. (Ziegler.)

Price, $45.

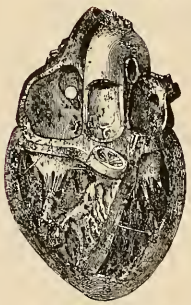
95 **DEVELOPMENT OF HUMAN HEART,**

Prof. His, series of twelve wax models with descriptions. (Ziegler.)

Price, $63.

96 **HEART**

Greatly enlarged, in elastic material. The septa between auricles and ventricles are left entire, the external wall removing in one piece. The valves being elastic, can be worked, thus rendering their functions easily demonstrable. The complete external anatomy is shown, with the origins and principal basal ramifications of all blood-vessels. Size 47 x 25 cm. (18 1/8 inches x 9 7/8 inches). Best model for the class-room. (Deyrolle.)

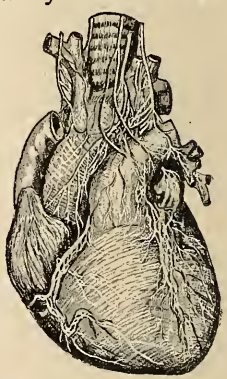


No. 96. HEART OPENED.

Price, $36.

96b **HEART, Fac-simile,**

Adult, in wax, with the nerves, the great vessels, the pericardium, etc. Both an-



No. 96b. HEART WITH NERVES.

terior and posterior faces are shown. A fac-simile of nature. Price, $65.

97 HEART OF ADULT,

Showing arrangement of cavities, muscular fibres, arteries and veins with their orifices, valves and nerves. (Auzoux.) Price, $17.50; price, duty free, $12.

98 HEART OF FOŒTUS,

As above, but showing also the disposition of the foramen ovale, Eustachian valve, arterial canal, etc. (Auzoux.)
Price, $17.50.
Price, duty free, $12.

99 HEART, Adult,

With arteries and veins. Sections open on hinges, disclosing auricles, ventricles and valves.
Price, $7.

100 HEART, Smaller Model,

As above, but smaller.
Price, $4.

101 HEART,

Greatly enlarged, standing upright on a portion of the diaphragm, Size, 38 x 27 cm. (15 inches x 10⅝ inches.) Dr. Bock. A section removes, exposing auricles, ventricles, valves, etc. The largest low-priced model made.

Price, $8.

102 HEART,

As above, but smaller and lying on a plaque; size, 15 x 20 cm.
Price, $5.

103 RED BLOOD-CORPUSCLE,

Enlarged model, 15 cm. (6 inches) in diam. of elastic material for demonstrating the various forms assumed by the corpuscles in their passage through the capillaries.
Price, $3.25.

17 HEAD,

Life size, showing the veins, the arteries, and the lymphatic system of the head and neck to the chest. The clavicle is exsected to show the common carotid artery and its branches, the internal and external carotid, the thyroid, lingual and

laryngeal arteries, etc. In appearance this model closely resembles a masterly dissection. Height 45 cm., width 40 cm. (17¾ in. x 15¾ in.) See cut. (Deyrolle.)
Price, with ebonized pedestal, $30.

No. 17. BLOOD VESSELS AND LYMPHATICS OF THE HEAD.

24 **ARM,**

Natural size, with integument removed, showing superficial network of veins of the internal face of the arm and hand, also the ligature of the humeral artery in its middle part, and of the radial and ulnar arteries in their proximal and distal portions. Mounted on ebonized pedestal. (Deyrolle.)
Price, $25.

No. 24. BLOOD VESSELS OF THE ARM.

27 **LEG,**

With skin removed, showing the network of superficial veins of the posterior part of the leg and foot, and the superficial nervous system, as well as the ligature of the posterior tibial artery on the internal face. Natural size, mounted on pedestal. (Deyrolle.)

Price, $25.

No. 27. BLOOD VESSELS OF THE LEG.

PHYSIOLOGICAL MODELS ILLUSTRATING THE MECHANISM OF THE HEART AND CIRCULATION, After Prof. W. Gilman Thompson, M. D.

As these models are made in this country, their prices are not subject discount for duty free importation.

MODEL OF AN ARTERY, Arterioles and Capillaries.

The several arterial coats, the nutrient vessels, vaso-motor nerve, etc., are shown. By means of blood-corpuscles (to be freshly modeled from wax and clay by the demonstrator), the appearance of the blood-stream in the capillaries may be simulated, with change of form of the red discs, passage of white corpuscles through the capillary walls, effect of obstruction of a capilary, formation of a clot, etc. Length of model, 5 feet. Price, including clay and wax for corpuscles, with directions, $45.

MODEL OF VEIN VALVES.

A simple working model of the valves in the veins and lymphatic vessels, or of the semi-lunar valves, of the heart. By introducing water at one end of the model the valves may be seen to close tightly, while reversing the direction of the current opens them.
Price, $2.50.

AUTOMATIC MODEL FOR RHYTHM, after Dr. W. Gilman Thompson.

"This model is intended to illustrate but a single physical fact, namely, that there is nothing remarkable in a continuous inflow being converted into an intermittent outflow. In the heart the inflow of the venous blood is not absolutely constant, being momentarily checked by the auricular systole, but it is nevertheless true that the blood occupies a much longer time in flowing into the heart than in leaving it. Moreover, when the intra-cardiac pressure has reached a certain maximum the heart empties itself, just as this model empties itself when a maximum pressure is attained." The model consists of a pivoted metallic box (the heart) divided into two unequal compartments, a pressure-bottle with a rubber tube for supplying the heart with colored water (blood), a receptacle to receive the outflow, and the necessary mechanical supports. On introducing a stream of water from the pressure-bottle to the heart it empties itself with perfect rhythm. By raising or lowering the pressure-bottle the frequency of discharges from the heart is varied, but always with exact rhythm.
Price, $12.

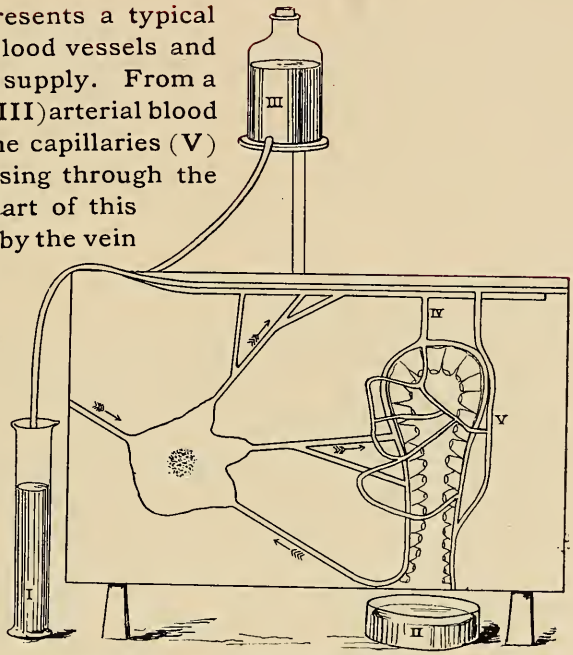
PULSE-WAVE MODEL, after Dr. W. Gilman Thompson.

The velocity of the pulse-wave, its gradual diminution in amplitude as it recedes from the heart, retardation of the pulse-wave, and the effect of slow and quick, feeble and forcible heart beats upon the arterial pulse, are shown by this model. The model consists of a long rubber tube with very elastic walls arranged upon an upright support. Pivoted levers rest upon the tubing at intervals. When water is forced through the tubing by a Davidson syringe (representing the heart) the movements of the pulse-wave are transmitted to the levers. The lever next the heart rises promptly and

extensively, the next lever rises perceptibly later and a little less extensively, and so on.
Price, $9.

AUTOMATIC GLAND MODEL, after Dr. W. Gilman Thompson.

The model represents a typical gland, with its blood vessels and regulating nerve supply. From a pressure-bottle (III) arterial blood (red) flows to the capillaries (V) and is seen coursing through the glass tubing. Part of this red fluid returns by the vein (IV) to a glass jar (I) where, by reagents previously placed there, it is decolorized and recolored blue; thus venous blood is seen to rise in the jar. The rest of the arterial blood is distributed to the columnar gland cells, where it is decolorized and a colorless secretion begins to trickle out of the neck of the gland into a glass dish (II). The nerve mechanism is diagrammatically represented by a large ganglion cell, with cords for afferent and efferent nerves. Impulses are communicated to the gland cells or to its blood supply by manipulating these cords. "The reaction of the red arterial fluid is shown to the class with litmus and found alkaline, while the clear, colorless secretion of the gland is found to be acid. It is thus impressed on the student that chemical changes have actually occurred in the gland cells and that secretion is not exclusively filtration." By raising or lowering the pressure-bottle, variations in the rapidity of the secretion will occur. The effect of pressure upon the vein, artery, or capilliaries may also be demonstrated. This model



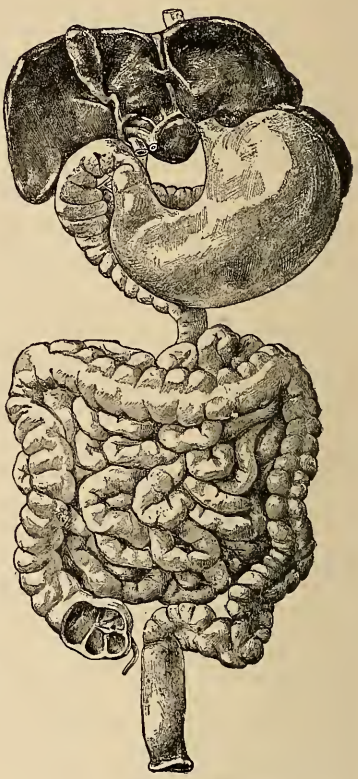
AUTOMATIC MODELTO ILLUSTRATE THE MECHANISM OF GLAND SECRETION.

illustrates many principles in regard to a typical gland secretion which apply equally to nearly all glands.
Price, with instructions, $30.

DIGESTIVE ORGANS.

105 **ABDOMEN,**
Life size, with diaphragm, stomach, liver, spleen, gall-bladder. kidneys, great and small intestines, ureters, bladder, etc. Completely dissecting.
Price, $27.

106 **DIGESTIVE SYSTEM,**
(75 x 35 cm.), showing liver, biliary vesicle, stomach, large and small intestines, etc. Mounted on pedestal with explanatory label. Exactly like nature, See cut. (Deyrolle.)
Price, $20.

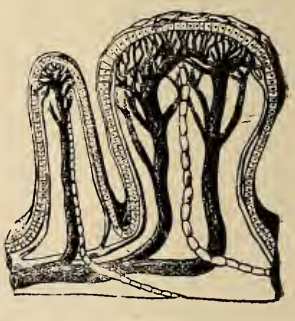


No. 106. DIGESTIVE SYSTEM.

107 **ALIMENTARY TRACT,**
With base of head and buccal cavity, œsophagus, stomach, spleen, liver, large and small intestines, etc. Life size, on black pedestal.
Price, $7.

108 **STOMACH,**
Dissecting, natural size.
Price, $6.

109 **INTESTINAL VILLI,**
Sections of two, greatly enlarged, showing on two faces the circulatory system of these organs and their lymphatic ducts. See cut. This piece is mounted on a pivot with base. Height, 20 cm.; length, 20 cm. (Deyrolle.)
Price, $12.



No. 109. INTESTINAL VILLI.

CHARLES H. WARD ROCHESTER N.Y. U.S.A.

THE EMBRYO.

111 **DEVELOPMENT OF EXTERNAL GENITAL ORGANS**

Of the human embryo. Series of ten wax models by Dr. Ziegler, after Dr. A. Ecker.
Price, $23.

112 **HUMAN EMBRYOS OF THE FIRST MONTH,**

Ziegler's beautiful series of eight models, after the researches of Dr. W. His.
Price, $55.

113 **HUMAN EMBRYOS OF SECOND MONTH,**

Two models in wax by Dr. Ziegler, after Dr. A. Ecker.
Price, $17.50.

No 114. ANATOMY OF HUMAN EMBRYO.

114 **ANATOMY OF HUMAN EMBRYO,**

(Pof. His), eight models in wax by Dr. Ziegler.
Price, $80.

HUMAN ÖOGENESIS AND EMBRYOGENY.

These models, beautifully executed in wax, are composed of two series; the first, after nature, represents the ovary and ovum at various stages, the embryo with its membranes, the

fœtus, and the complete genital organs, both before conception and at full term. The second series demonstrates by semi-schematic sections the various phases through which the ovum passes, from its departure from the Graafian vesicle to the complete formation of the placenta. (Deyrolle.)

115 SERIES A. EMBRYOGENY.

I OVARY.

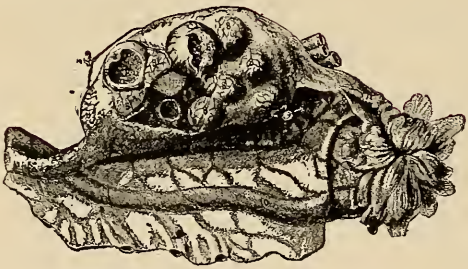
Very greatly enlarged, with Fallopian tube, the Graafian vesicles, and the envelopes, showing the position of the ovum. 30 cm. long.
Price, $16.

II RIPE OVUM,

Removed from vesicle; enlarged about 800 times.
Price, $8.

III OVUM IN PROCESS OF SEGMENTATION,

With albuminous envelope and spermatozoa; enlarged 350 times.
Price, $8.



I. OVARY WITH FALLOPIAN TUBE.

II. RIPE OVUM.

III. OVUM IN PROCESS OF SEGMENTATION.

IV. OVUM FOUR DAYS AFTER FECUNDATION.

V. OVUM EIGHT DAYS AFTER FECUNDATION.

IV OVUM FOUR DAYS AFTER FECUNDATION,

enlarged 300 times.
Price, $8.

V OVUM EIGHT DAYS AFTER FECUNDATION,
Enlarged 120 times.
Price, $8.

VI. OVUM SHOWING CEREBRO-SPINAL AXIS.

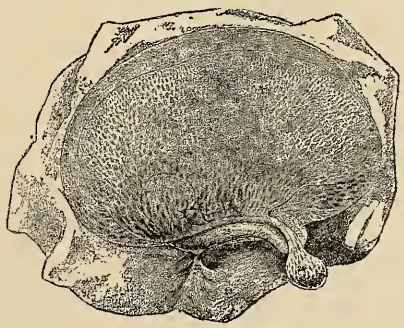
VII. OVUM TEN DAYS AFTER FECUNDATION.

VI OVUM MORE DEVELOPED
Than preceding, showing the cerebro-spinal axis with traces of segmentation, Enlarged 60 times.
Price, $10.

VII OVUM OF ABOUT TEN DAYS,
Showing first outlines of the embryonic circulation and the umbilical vesicle. Enlarged about thirty times.
Price, $12.
Each of the above models except No. 1 is 12 cm. in diameter and is protected by a glass case.

VIII EMBRYO OF ABOUT TWELVE DAYS,
Showing amnion still connected with the layers of the blastoderm; the cephalic extremity depresses the umbilical vesicle, revealing the allantois. Greatly enlarged; 16 cm. long.
Price, $16.

IX EMBRYO OF FIFTEEN TO EIGHTEEN DAYS,
with its membranes, showing anatomical details, which are essentially alike in all mammals at this stage.
Enlarged about 15 times.
Diam. 24 cm.
Price, $20.



VIII. EMBRYO OF ABOUT 12 DAYS.

X EMBRYO OF TWENTY-ONE DAYS.

One can already see the cephalic organs in a rudimentary state. Enlarged 15 times. Diam. 24 cm.
Price, $20.

XI EMBRYO OF TWENTY-FIVE DAYS.

The rudimentary buds of the limbs are present and the Wolffian bodies are forming. Enlarged about ten times. Diam. 24 cm.
Price, $20.

XII EMBRYO OF FORTY DAYS,

Dissected to show internal organs. The limbs are developed. Greatly enlarged. 15 cm. long.
Price, $20.

XIII UTERUS AT THE BEGINNING OF THE SECOND MONTH

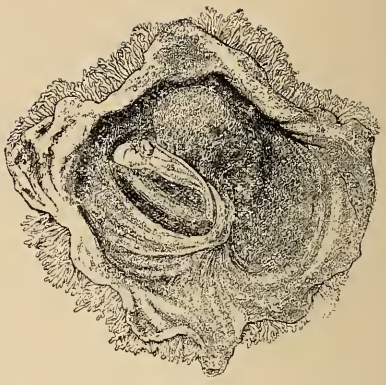
Of pregnancy, with the fœtus seen through the membranes. Natural size.
Price, $20.

XIV UTERUS DURING THIRD MONTH

Of pregnancy, with the fœtus seen through the membranes. Natural size. Price, $27.

XV UTERUS AT FOUR MONTHS,

With the fœtus seen through its membranes. Natual size. 27 cm. long. Price, $28.



IX. EMBRYO OF 15 DAYS.

X. EMBRYO OF 21 DAYS

XI. EMBRYO OF 25 DAYS.

XVI FŒTUS AT TERM, WITH PLACENTA.

Opened to show the mechanism of the fœtal circulation. Natural size.
Price, $76.

XIII. UTERUS IN THE SECOND MONTH OF PREGNANCY.

XVII TORSO OF A WOMAN,

Showing kidneys, bladder, external and internal genital organs. The uterus is empty. Natural size.
Price, $135.

XVIII TORSO OF A WOMAN WITH FŒTUS,

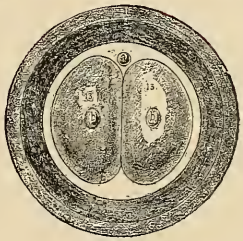
At full term, the intestines displaced by the enlarged uterus.
Price, $152.

Each piece is in a glass case (opening) for protection against dust. For the complete collection of eighteen pieces, reunited in large glass cases, a special price will be quoted.

116 SERIES B.

THEORY OF DEVELOPMENT OF THE HUMAN OVUM

From its arrival in the uterus down to the formation of the placenta, illustrated by semi-schematic sections greatly magnified.



IV. DIVISION OF CELL-BODY.

I THE RIPE OVUM,

Enlarged 800 diams.

II THE OVUM ON ITS ARRIVAL

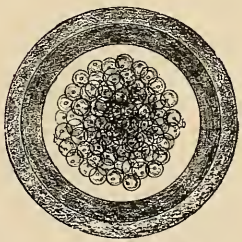
In the uterus, enlarged 600 diams.

III A NUCLEUS APPEARS

In the cell-body. Enlarged 500 diams.

IV THE VITELLUS

Divides into two parts, each containing a nucleus. See cut. Enlarged 500 diams.



V. MORULA STAGE.

V THE VITELLUS

Is divided into a large number of little spheres each containing a nucleus. See cut. Enlarged 400 diams.

VI THE VITELLUS

Pushes the cellules towards the periphery, where they form the blastodermic membrane. See cut. Enlarged 300 diams.

VI. FORMATION OF BLASTODERM.

VII THE BLASTODERM

Is divided into two membranes. Enlarged 100 diams.

VIII THE AMNIOTIC UMBILICUS

Shows the first traces of the circulation. See cut. Enlarged 30 diams.

IX THE VITELLINE MEMBRANE IS RESORBED;

The umbilical vesicle appears. Enlarged 25 diams.

VIII. FIRST TRACES OF THE CIRCULATION.

X SHOWING THE AMNION

Completely enveloping the embryo. See cut.

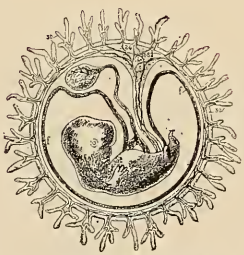
XI EMBRYO OF TWENTY-FIVE DAYS.

See cut.

XII SHOWING THE FORMATION OF THE PLACENTA.

Natural size.

Price, the twelve models in a glass case, $115.



X. EXBRYO ENVELOPED IN THE AMNION.

XI EMBRYO OF 25 DAYS.

GENITO—URINARY ORGANS.

117 **PELVIS OF MAN,**

With external and internal organs of generation, muscles, aponeuroses of the perineum, arteries, veins and nerves. Of natural size. The finest dissecting model of this region in existence. (Auzoux.)
Price, $100; price, duty free, $72.

119 **VERTICAL SECTION**

Through genitals of a frozen male body.
Price, $5.

119b **MALE GENITO—URINARY APPARATUS,**

Consisting of the urocyst, the penis longitudinally sectioned. Cowper's glands, the prostate gland and the seminal vesicle. Life sized model in wax.
Price, $20.

120 **PELVIS OF WOMAN,**

Natural size, with external and internal organs of generation, lumbar vertebræ, diaphragm, muscles, the aponeuroses of the perineum, arteries, veins and nerves. Equally as fine as No. 117. (Auzoux.)
Price, $100; price, duty free, $72.

120b **PUBIS OF WOMAN,**

With organs of generation complete, and with two interchangeable uteri, containing the fœtus at one and three months.
Price, $50; price, duty free, $37.50.

122 **VERTICAL SECTION THROUGH GENITALS,**

Of a frozen female body.
Price, $5.
For male or female pelvis, with or without ligaments, fœtal skulls, etc., see pages 35 and 19.

123 **SERIES OF EIGHT UTERI,**

Showing the fœtus at 1, 2, 3, 5, 8 and 9 months, with examples of ovarian and of tubular gestation. (Auzoux.)
Price, $100; price, duty free, $72.

124 **THE NINE MONTHLY STAGES OF PREGNANCY.**

Series composed of nine models, each representing one lateral half of the pelvic region of a pregnant woman from the lumbar

region to the upper third of the thigh. The uterus of each model contains a fœtus, (in one model twins are shown), each month from the first month after conception to full term being represented. Both normal and breech presentations are also given. Every detail of the fœtus is clearly discernible through the transparent walls of the uterus and the changes in the position of the maternal viscera caused by the enlarging uterus are distinctly seen. Each model is mounted in an upright position upon an ebonized pedestal and is protected by a glass dome. Nothing finer has ever been attempted.
Price, nine models under glass domes, $900.
Price, duty free, $675.

127 KIDNEY, Enlarged Four Diameters.

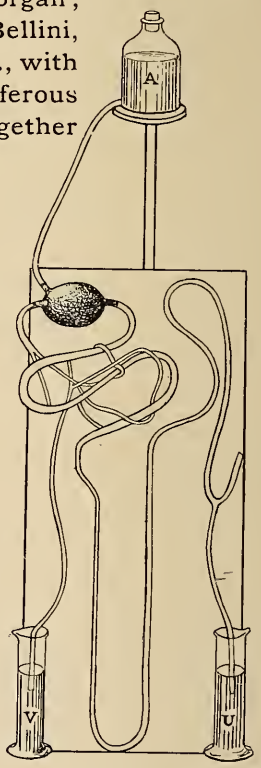
This piece, founded upon the observations of Kolliker, Schweiger-Seider, Ludwig and others, reveals by median sections, all the constituent parts of this organ; the pyramids of Malpighi, the ducts of Bellini, the labyrinth, the columns of Bertin, etc., with the complete development of the uriniferous tube from its origin to its termination, together with the arterial and venous circulation. (Auzoux.)
Price, $42; price, duty free, $31.50.

PHYSIOLOGICAL MODELS,

Designed by DR. W. GILMAN THOMPSON, Professor of Medicine, Cornell University Medical College.
(Being made here there is no duty free price on these.)

AUTOMATIC KIDNEY MODEL.

The model represents a Malpighian corpuscle with afferent and efferent vessels, a venous plexus, convoluted tubule, loop of Henle, and collecting tube. Red arterial blood from the pressure-bottle, A enters the corpuscle, a portion passing through the convoluted tubule, loop of Henle, etc., is received in the jar U, where it appears as pale yellow urine. Another portion passes out of the effer-



AUTOMATIC KIDNEY MODEL.

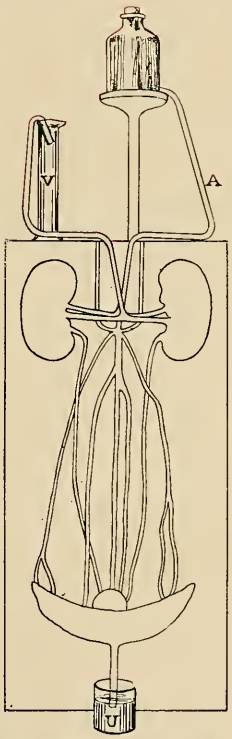
CHARLES HOWARD ROCHESTER N.Y. U.S.A.

ent vessel and is seen flowing through the capillary plexus returning as blue venous blood to the jar V. The change in reaction from alkaline blood to acid urine is shown by litmus. As the quantity of urine increases it becomes less strongly acid and paler. The effect of increased or diminished arterial pressure is shown by raising or lowering the pressure-bottle. Venous or arterial obstruction or obstruction in the tubule (casts) all give striking results, as seen by the quantity of fluid discharged.

Price, with directions, $14.

AUTOMATIC MICTURITION MODEL, after Dr. W. Gilman Thompson.

The model represents the two kidneys with their renal veins, arteries and ureters, together with the bladder, lower abdominal wall, and spinal cord centre, with nerves for control of micturition. Arterial blood flows from the pressure-bottle to both kidneys. It returns in part as venous blood (blue) to the glass vessel V. The rest of the fluid flows into the ureter and thence to the bladder. As this becomes distended with urine, it gradually rises above the brim of the pelvis and pushes forward the abdominal wall. The urethra is kept closed by a clamp. On releasing this clamp, the bladder being full, the urine (yellow) flows in a vigorous stream from the urethra; the bladder is seen to contract and recede below the abdominal wall, and the latter also contracts and presses upon the bladder. The clamp is then re-applied and the bladder refills. It can be shown that the urine is a continuous secretion, subject only to variations in quantity, which are, in part, dependent upon the absolute or relative pressure of the blood-vessels. Incontinence from retention may be demonstrated by using a weak clamp which yields where a certain intra-vesical pressure is



MODEL TO ILLUSTRATE THE MECHANISM OF MICTURITION.

attained. Suppression may also be demonstrated. The nerve mechanism, from the micturition centre to the fundus and neck of the bladder, the abdominal walls, and upward towards the brain, is shown. Hæmoglobinuria, with alkaline urine, may be demonstrated. The small quantities of reagents used being added to the bottles or jars before entering the lecture room are not visible a few feet away, and the illusion produced by rapid changes in color and reaction is complete.
Price, with full instructions, $30.

OBSTETRIC PHANTOMS.

128 **OBSTETRIC MANIKIN of DRS. BUDIN AND PINARD.**

Mathieu's model complete, in carved wood, laquéred. For touch, palpation, the operations in general, versions by both external and internal manipulations, applications of the forceps, cephalotripsy, cephalotomy, evicerations, etc., with uterus, artificial bag of waters and ulva with perineum of rubber, movable sacrum with which to produce anterio-posterior contractions with a corresponding curvature of the vertebral column, etc. Fœtus not included. There is no better manikin made.
Price, $200; price, duty free, $150.

129 **BUDIN-PINARD OBSTETRIC MANIKIN,**

Simpler model, in carved wood, laquered. For touch, the operations and maneuvers above mentioned, the sacrum not being mobile. Model Mathieu brevette.
Price, $150; price, duty free, $114.

THE RUBBER FITTINGS

For either of these manikins will be imported to order.

130 **ARTIFICIAL FŒTUS,**

With placenta and umbilical cord, ordinary style.
Price, $10; price, duty free, $7.50.

131 **FŒTUS WITH COMPRESSIBLE HEAD,**

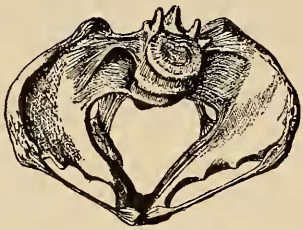
And with placenta as above.
Price, $18; price, duty free, $13.50.

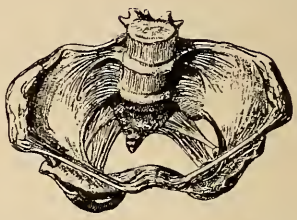
COLLECTION OF DEFORMED PELVES OFFERING IMPEDIMENTS TO DELIVERY.

This collection is composed of 22 models, molded from nature, presenting the best examples of the principal vices of conformation. It also includes a male and a female pelvis of normal type. The pelves are of papier maché, with artificial ligaments.

1 Typical Normal Male Pelvis.
2 Typical Normal Female Pelvis.
3 Pelvis of a Child of 10 years deformed by congenital luxation of both femora.
4 Pelvis deformed by osteomalacia, advanced stage.
5 Pelvis deformed by congenital luxation of both femora; adult.
6 Rachitic Pelvis with swelling of the bone, from a subject of 18 years.
7 Rachitic Pelvis, slight atrophy of the superior strait and left lateral deviation of the promontory; adult.
8 Deformed Pelvis with contraction of the inlet and expansion of the outlet; adult.
9 Deformed Pelvis, fracture of the ilia; heart-shaped inlet; adult.
10 Rachitic Pelvis with projection of the sacrum and contraction of the antero-posterior diameters; adult.
11 Rachitic Pelvis with projection of the promontory, lateral flattening and heart-shaped inlet; adult.
12 Rachitic Pelvis, protuberance of the left side of the sacrum, a depression corresponding to the ilium of the same side, and a contraction of the left oblique diameter of the inlet.
13 Oblique Oval Pelvis of M. Nœgel.
14 Deformed Pelvis; considerable contraction of the transverse diameter, with pronounced protuberance of the Promontory.
15 Deformed Pelvis from congenital luxation of one femur.
16 Rachitic Pelvis of an infant.
17 Deformed Pelvis with spontaneous dislocation of one femur.
18 Deformed Pelvis, due to osteomalacia; slightly advanced; adult.
19 Deformed Pelvis, funnel-shaped; enlargement of the inlet, contraction of the outlet.
20 Rachitic Pelvis, the antero-posterior diameter of the inlet measuring 3 cm.; the Cæsarian operation was performed on this subject.

21 Rachitic Pelvis which necessitated the Cæsarian operation.
22 Rachitic Pelvis; Cæsarian operation.
23 Spondylous Pelvis of Hergott.
24 Pelvis of Guichard of Nantes.
Price, complete collection of 24 pelves, $225.
Price of collection, duty free, $168.75.
Price, each $12.





PLASTER FAC-SIMILES OF HANDS AND FEET.

RIGHT HAND OF KELLAR, the Prestidigitator,
From life. Interesting from its extreme muscular development combined with great tactile sensibility.
Fingers are widely spread.
Price, $2.

RIGHT HAND OF LABORER, from life, showing effect of hard work.
Price, $1.75

RIGHT HAND OF LADY,
Undeveloped and retaining infantile characteristics.
Price, $1.25.

RIGHT FOOT OF CHINESE LADY OF RANK,
From life. A unique example of the "golden lily" or foot whose growth has been forcibly arrested.
Price, $1.

RIGHT FOOT OF AMERICAN LADY,
Deformed by ill-fitting shoes. But four toes are visible on the plantar surface.
Price, $1.25.

RIGHT FOOT OF LADY OF FASHION,
Extremely deformed.
Price, $1.50.

RIGHT FOOT OF EUROPEAN PEASANT,
Showing normal unrestricted development.
Price, $1.25.

CASTS OF CRANIA OF ABORIGINAL TYPES OF MAN,

Arranged by the late Professor Fleurens, Director of the Department of Anthropology of the Museum of the Jardin des Plantes, Paris, where most of the original specimens are deposited. The series includes skulls of the following races:

1 ANCIENT AYMARA OR QUECHUA. Bolivia.

2 AYMARA CHILD. Ancient tombs of Carangas, Bolivia.
"Elongated symmetrical deformation." Of Morton.

3 INDIAN; Ancient Tombs of Bolivia.

4 MADURA. Dutch East Indies.

5 CHINOOK OR "FLAT HEAD" INDIAN,
Columbia River, Oregon. A well-known type of artificial deformity.

6 NAMAQUA HOTTENTOT. South West Africa.

7 NANAQUOIS.

8 CARIB. Leeward Islands, Cuneiform Deformation.

9 BOSJESMAN WOMAN, South Africa.
The famous "Hottentot Venus," dissected by Cuvier.

10 NEGRESS. SIERRA LEONE. Feloupa Tribe.

11 MOZAMBIQUE. Kaffir Type. Portuguese East Africa.

12 MALABAR. Dravidian Type.

13 BENGALESE. Hindu Type.

14 PATAGONIAN OR TEHUELCHE. Dolichocephalic.

15 BEDOUIN. Nomadic Arab.

16 TASMANIAN. An Extinct Type of Negroes.
Quite distinct from all neighboring races.

17 CAUCASIAN WOMAN.

18 SKULL, from Isla de Sacraficios, Gulf of Mexico.
With the celebrated Trilobed Deformation.

19 MAORI, New Zealand.
A mixed race containing individuals of pure Polynesian type, with others of mixed Malay and Melanesian blood.

20 ESKIMO,
The most dolichocephalic and leptorrhinian type known. Maxillary bones enormous; molars very large and thick.

21 MALAY WOMAN.
Brachycephalic; flat nosed, teeth filed.

22 CHINESE. A composite race, the so-called Mongolian Type.
Cranial capacity between the Negro and the European.

23 MADAGASCARENE.
An off-shoot from the Malayo-Polynesian group, in no way conncted with African races.

24 ANCIENT DRUID, Probably a Man.

25 ANCIENT DRUID, Probably a Woman.

26 LAPP MAN.
27 LAPP WOMAN. } The most brachycephalic race in existence; average cephalic index 85.

28 MUSCOVITE, Russia.

29 ABORIGINAL SWEDE. Dolicocephalic blond type.

30 FINN.
A type clearly distinct from all surrounding tribes.

31 ENGIS SKULL, Cave of Engis, Near Lieges, Germany,
Found hidden under 5 feet of an osseous breccia, containing bones of extinct mammals.

32 NEANDERTHAL SKULL, Discovered in a Cavern in Neanderthal, Prussia, in 1857. Mammoth Epoch.
The most famous of human skulls. A four-page reprint of Professor Schaaffhausen's original description of this skull, together with quotations from Darwin, Huxley and Topinard is included.

33 POLYNESIAN. Rapa-Nis, Easter Islands.
Mesaticephalic, Mesorrhinian.

34 MEXICAN. Aztec-Toltec family.

Price, series of 34 skulls, $80. Single specimens, $2.50.

35 NEANDERTHAL BRAIN
(Intercranial cast of the famous Neanderthal skull.) Price $2.25

36 SKULL OF PITHECANTHROPUS ERECTUS
Dubois "Ape-Man," discovered in Java in 1901, in strata of the Pliocene age. The strongest direct evidence for the evolution of man yet presented. The cast is colored to differentiate the bone from the adhering stone matrix. An 8-page illustrated description by the late Prof. Marsh is included. Price $3.50

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The following preparations by Dr. Buchhold, present large, typical sections of various organs, both normal and diseased. They are uniformly mounted, according to the system of Dr. Möller-Morin, in sealed glass capsules, flat on one side, convex on the reverse, and of the following diameters: 12 cm., 16 cm., 20 cm., 24 cm., (4¾, 6½, 7¾ and 9½ inches). Each capsule is mounted in a square, cloth-covered tablet, which is enclosed in a heavy, hinged shipping case.

They are especially adapted for class demonstration, as well as for projection by means of the episcope, and may be handled without danger of breakage.

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		PRICE.
1	Normal Lung,	$ 6.00
2	Subacute, disseminated Tuberculosis of the Lung,	$6 to 7.50
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6	Chronic caseous and ulcerative Tuberculosis of the Lung, forming cavities,	$6 to 12.50
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16	Fatty Liver, in Chronic Pulmonary Tuberculosis,	6.00
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PREPARATIONS OF THE ACTUAL TISSUES.

		PRICE.
26	Passive congestion of the Spleen,	$ 7.50
27	Normal Kidney,	6.00
28	Normal anemic Kidney of new born child,	6.00
29	Tuberculosis of the Kidney,	7.50
30	Chronic parenchymatous Nephritis, terminating in contraction,	$7.50 to 12.50
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32	Senile atrophy of the Kidney,	12.50
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34	Hydronephrosis; anemia of the Kidney,	10.00
35	Normal Kidney of the new born, showing fœtal lobes,	6.00
36	Normal Heart, opened,	20.00
37	Normal Heart of the new born, opened,	15.00
38	Ulcerative Endocarditis of the mitral valve,	30.00
39	Advanced fatty Cardiac Degeneration with hypertrophy from general obesity,	25.00
40	Gunshot Wound of the Heart,	25.00
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43	Advanced Stenosis of the mitral valve in chronic, recurrent verrucous Endocarditis. Imprisonment of a clot in the auricle,	30.00
44	Chronic Catarrh of the Stomach (passive congestion) with formation of Polypi,	12.50
45	Carcinoma of Stomach (necrotic Diphtheroid Gastritis),	12.50
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49	Recent round Ulcers and hæmorrhagic erosions of the Stomach,	10.00
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51	Stomach, showing Cyanide of Potassium poisoning,	10.00
52	Rhachitis; Costal Cartilage,	$5 to 12.50
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54	Normal Cerebrum and Cerebellum, 12 to 14 sections,	75.00
55	Section of Cerebrum,	$6 to 7.50
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57	Gunshot Wound of the base of the brain,	25.00
58	Stricture of the Œsophagus and perforation of the Trachea,	25.00

A LIST OF PREPARATIONS of the Horse, Cow and Hog and of Parasites, both human and comparative, will be mailed upon application.

PORTRAIT BUSTS OF EMINENT MEN.

These busts were moulded directly from the originals in bronze and marble; both heroic and life size busts for the adornment of halls, museums and institutions and reduced sizes, suitable for the office or private library, are listed. The white finish (which is not the raw plaster, but a hard polished surface, readily cleaned) gives a better likeness than the imitation bronze; the latter closely resembling antique bronze, with traces of oxidation, presents a massive effect.

LINNÆUS. CUVIER. BUFFON.

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Square base.
Price, life size, 2 feet high, $4.
Price, reduced size, 1 foot high, $1.50.

AGASSIZ, Louis John Rudolph. 1807-1875. Square base.

Height, 23½ inches.
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BUFFON, Geo. Louis Leclerc, 1707-1758.

Height, 22½ inches. Square base.
Price, white, $5. Imitation bronze, $6.50. See cut.
Price, reduction of above, 8½ inches, white, $2. See cut.

BERZELIUS, 1779-1848. Swedish Chemist. Hgt. 25½ inches.
Price, imported to order, white, $12.

BILLROTH, Theodor, 1829-1894. Surgeon. Hgt. 20 inches.
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CUVIER, Georges. 1760-1832. The Father of Comparative Anatomy.
Price, 22½ inches high, white, $5. Imitation bronze, $6.50.
Price, reduction of above, height 8½ inches, $2. See cut.

DARWIN, Charles. 1809-1882. Great English Naturalist.
Price, 23 inches high, white, $6. Imitation bronze, $7.50.
Price, reduced size, 8¾ inches, white, $2.

DU BOIS-REYMOND, Emil. 1818-1896. German Physiologist.
Price, 25½ inches high, imported, white, $15.

GALEN, (Claudius Galenus), 130.—Greek Physician.
Original, life size. Square base. Height, 2 feet.
Price, white, $4. Imitation bronze, $5.50.

HIPPOCRATES, 400 B. C.—"The Father of Medicine."
Price, life size, 2 ft. 2 in., white, $4.50. Imitation bronze, $6.
Price, reduced size, 10 inches, square base, white, $1.25.
Imitation bronze, $2.

HELMHOLTZ, Herman Ludwig Ferdinand von,
1821-1896. German physiologist and physicist. Inventor of the Ophthalmoscope.
Price, 25½ inches high, imported to order, white, $16.
Price, reduced size, imported to order, 13 inches, $4.

HENLE, Friedrick Gustav Jakob,
1809-1885. German physiologist and chemist.
Price, 25½ inches high, imported to order, white, $18.

HUMBOLDT, Friedrich Heinrich Alexander von.
1769-1859. Celebrated German scientist.
Price, 2 feet high, white, $5. Imitation bronze, $6.50.
Price, reduced size, 8¾ inches, white, $2.

HUXLEY, Thomas Henry,
1825-1895. Great English biologist.
Price, 27½ inches high, white, $7.50. Imitation bronze $9.

KOCH, Dr. Robert.
1843- . Discoverer of the tubercle bacillus.
Price, 27½ inches high, imported to order, white, $16.
Price, reduced size, 8¾ inches, $2.

LANGENBECK, Konrad Johann Martin.
1776-1851. Anatomist and surgeon.
Price, 25½ inches high, imported to order, white, $18.

LIEBIG, Justus von. 1803-1873.
Great German chemist.
Price, 25½ inches high, imported to order, white, $12.

LINNÆUS, Carolus, (Karl Von Linné).
1707-1778. Celebrated Swedish botanist and naturalist.
Price 22 inches high, square base, white, $5. Imitation bronze, $6.50.
Price, reductions of above, 8½ inches, white, $2. See cut.

PARÉ, Ambroise, 1517-1590. The Father of French Surgery.
Price, life size, 25 inches, white, $6. Imitation bronze, $7.50.

ST. HILAIRE, Etienne Geoffroy,
1772-1834. Noted French zoologist and comparative anatomist. Square base. 21¾ inches high.
Price, white, $5. Imitation bronze, $6.50.

SÖMMERING, Samuel Thomas von.
1755-1830. Noted German anatomist and physiologist.
Price, 25½ inches high, imported to order, white, $16.

VIRCHOW, Rudolf,
1821- . Anatomist, physiologist, anthropologist. Founder of Cellular Pathology.
Price, 31½ inches high, imported to order, white, $21.

OAK-LEAF BRACKET,
For busts. Shelf 16½ x 13½; height, 14 inches.
Price, white, $5. Imitation bronze, $6.50.

FLUTED PEDESTAL,
For busts; diameter of top, 14½ inches; height, 33 inches.
Price, white, $8. Imitation bronze, $10.

"THE BEAR HUNT."

A STUDY IN COMPARATIVE OSTEOLOGY.

Designed and Mounted by Charles H. Ward.

GROUP COMPOSED OF SKELETONS OF

MAN, (Homo sapiens)
HORSE, (Equus caballus)
DOG, (Canis familiaris)
BEAR, (Ursus americanus)

Presented to the Medical Department, University of Buffalo, by Dr. Charles Cary.

PART II—COMPARATIVE ANATOMY.

OSTEOLOGY.

MOUNTED SKELETONS.

The following brief list comprises adult specimens only, selected for size, dentition and entirety. The species and the sex when given, may be relied upon. Each specimen is thoroughly degreased and bleached, and the ligamentary skeletons are so prepared as to present the articulations and extremities unconcealed by tissue.

The mountings, of polished brass and steel, are nickel-plated, the pedestals are of quartered-oak, highly finished, save for climbing or perching forms for which walnut perches or natural branches are used. Characteristic postures have in every case been sought, thus accentuating the utility of structural modifications, and endowing the skeleton with a semblance of life. Where great action or difficult poses are desired (see cut of group on preceding page) a special price will be quoted. An extended list being here impracticable, patrons desiring skeletons of species other than those presented, are requested to communicate with the undersigned,

CHARLES H. WARD, 387 West Ave.
~~45-47 Mt. Hope Avenue,~~ Rochester, N. Y.

MAMMALS.

PRIMATES.

	PRICE.
Simia satyrus, male, (Orang Utan)	$200.00
Cercopithecus griseo-viridis, (Grivet)	20.00
Macacus nemestrinus, (Bruh)	22.00
Hapale jacchus, (Black-eared Marmoset)	12.00

CHEIROPTERA.

Pteropus edulis, (Flying "Fox")	12.00
Vesperugo serotinus, (Little Brown Bat)	9.00
Vesperugo noctula,	8.00
Vespertilio murinus,	7.50

INSECTIVORA.

Erinaceus europæus, (Hedgehog)	9.00
Sorex fodiens, (Shrew)	5.00
Condylura cristata, (Star-nosed Mole)	7.00
Talpa europæa (Mole)	9.50

CARNIVORA.

	PRICE.
Felis domestica, (Common Cat)	$ 12.00
Canis familiaris, (Dog)	$15 to 35.00
Ursus americanus, (Black Bear)	75.00
Procyon lotor, (Raccoon)	17.00
Eumetopias stelleri, (Steller's Sea Lion)	male, 100.00 female, 75.00

RODENTIA,

Sciurus carolinensis, (Grey Squirrel)	9.00
Tamias striatus, (Chipmunk)	7.00
Arctomys monax. (Woodchuck)	10.00
Castor fiber, (European Beaver)	30.00
Fiber zibethicus, (Muskrat)	9.50
Mus decumanus, (Norway Rat)	7.00
Mus musculus, (House Mouse)	6.00
Cavia cobaya, (Guinea "Pig")	7.00
Lepus sylvaticus, (Grey Rabbit)	10.00

UNGULATA.

Sus scrofa, male, (Domestic Boar)	50.00
Bos taurus, (Cow)	75.00
Ovis aries, (Sheep)	35.00
Capra ægagrus, (Goat)	35.00
Equus caballus, (Horse)	$75 to 90.00

BIRDS.

RAPTORES.

Buteo lineatus, (Red-shouldered Hawk)	12.00
Nyctala acadia, (Acadian Owl)	9.00

PASSERES.

Ceryle alcyon, (Belted Kingfisher)	8.00
Sitta cæsia, (Nuthatch)	5.00
Turdus migratorius, (Robin)	6.00
Corvus americanus, (Common Crow)	9.00
Passer domestica, (English Sparrow,	5.00

COLUMBÆ.

Columbia livia domestica, (Common Pigeon)	6.00
Zenaidura carolinensis, (Mourning Dove)	9.00

	PRICE.
GALLINÆ.	
Gallus domestica, (Domestic Fowl)	$ 10.00
GRALLÆ.	
Grus canadensis, (Sandhill Crane)	20.00
Ardea herodias, (Great Blue Heron)	18.00
ANSERES.	
Mergus merganser, (Merganser)	11.00
Branta canadensis, (Canada Goose)	20.00

REPTILIA.

SAURIA.	
Draco volans, (Flying Lizard)	14.00
Phrynosoma orbicularis, (Horned "Toad")	8.00
Anguis fragilis, (Blind Worm)	8.00
Lacerta viridis, (Green Lizard)	7.00
Stellio vulgaris, (Star Lizard)	6.50
Varanus griseus, (Monitor)	20.00
Scoloporus scalaris,	8.00
Scoloporus torquatus,	8.50
OPHIDIA.	
Python molurus, (Indian Python)	50.00
Boa constrictor, (Boa)	40.00
Crotalus durissus, (Southern Rattlesnake)	25.00
Pelias berus, (Viper)	7.00
Bascanion constrictor, (Black Snake)	18.00
Nerodia sipedon, (Water Snake)	15.00
Tropidonotus natrix, (Ringed Snake)	10.00
Vipera amodytes, (Viper)	10.00
CHELONIA.	
Testudo græca, (Tartaruga)	6.00
Cistudo clausa, (Box Tortoise)	8.00
Emys europæa, (Emys)	6.50
Chrysemys picta, (Painted Tortoise)	7.00
Chelydra serpentina, (Snapping Turtle)	14.00
CROCODILIA.	
Alligator mississippiensis, (Alligator)	$20 to 75.00

AMPHIBIA.

UROPELA.

	PRICE.
Proteus anguinis, (Proteus)	$ 12.00
Menobranchus lateralis, (Mud Puppy)	10.00
Amphiuma means, (Congo "Eel")	16.00

ANOURA.

Bufo lentiginosus, (Common Toad)	5.00
Bufo vulgaris, (European Toad)	6.00
Pipa pallasi, (Cell-backed Toad)	12.00
Rana catesbiana, (Bull Frog)	7.00
Rana sylvatica, (Wood Frog)	5.00

PISCES.

CHONDROPTERYGII.

Lamna sp. (Porbeagle) jaws only,	5.00
Pristiquorum antiquorum, (Saw Fish) saws only, from 32 in. to 44 in. long. Mounted,	$6 to 10.00

GANOIDEI.

Acipenser sturio, (Common Sturgeon)	15.20
Polypterus bichir, (Polypterus)	15.00
Amia calva, (Dog-fish)	12.00
Lepidosteus osseus, (Gar Pike)	15.00

ACANTHOPTERYGII.

Perca americana, (Perch)	9.00
Sargus ovis, (Sheepshead)	12.00
Centrarchus fasciatus, (Black Bass)	11.00

ANACANTHINI.

Gadus morrhua, (Cod Fish)	18.25
Platessa oblonga, (Flounder)	12.00

PHYSOSTOMI.

Amiurus nebulosus, (Cat Fish)	10.00
Esox lucius, (Pickerel)	15.00
Anguilla acutirostris, (Eel)	13.00

PLECTOGNATHI.

Tetrodon, (Balloon Fish) jaws only, mounted,	3.00

CYCLOSTOMATA.

Petromyzon fluviatilis, (River Lamprey) Mounted in formalin, in glass jar.	15.00

SKULLS.

These may be had either mounted or unmounted at prices quoted. In either case the jaws are articulated by springs. The mounting consists of a nickel-plated brass standard, fitted to support the skull, (which may be removed at will) rising from a circular pedestal of polished black-walnut. A complete label accompanies each specimen.

MAMMALS.

	PRICE MOUNTED.	PRICE UNMOUNTED.
PRIMATES.		
Semnopithecus entellus,	$ 5.50	$ 4.50
Cercopithecus sabæus,	4.00	3.00
Cercopithecus, young,	3.50	2.75
Macacus cynomolgus,	4.00	3.00
Ateles melanchor,	4.00	3.00
CARNIVORA.		
Felis concolor,	7.25	6.00
Felis domestica,	2.25	1.50
Felis domestica, (Kitten)	2.00	1.50
Lynx rufus,	4.75	3.50
Canis familiaris,	$3.50 to 6.00	$2.50 to 5.00
Canis vulpes,	3.50	2.50
Gulo luscus,	6.00	5.00
Mephitis mephitica,	3.00	2.00
Nasua rufa,	4.50	3.50
Ursus americanus,	10.00	9.50
Ursus americanus, young,	8.00	7.00
Procyon lotor,	3.00	2.00
Phoca vitulina,	6.25	5.00
Phoca vitulina, young,	5.00	4.00
INSECTIVORA.		
Talpa europæa,	1.50	.75
Condylura cristata,	2.25	1.50
Scalops aquaticus,	2.25	1.50
RODENTIA.		
Sciurus carolinensis,	2.00	1.25
Sciurus hudsonius,	2.00	1.25
Tamias striatus,	1.75	1.00

RODENTIA—Continued.	PRICE MOUNTED.	PRICE UNMOUNTED.
Arctomys monax,	$ 2.25	$ 1.50
Mus decumanus,	1.50	.75
Mus musculus,	1.50	.75
Fiber zibethicus,	1.75	1.00
Cavia cobaya,	2.00	1.25
Lepus sylvaticus,	2.25	1.50
UNGULATA.		
Equus caballus,	11.25	9.00
Equus asinus,	11.25	9.00
Capra hircus,		
Sus scrofa domestica, (male)	8.75	7.00
Ovis aries, male or female,	6.50	5.00
Alces malchis, male,	27.00	25.00
Bos taurus,	11.25	9.00
Hippopotamus amphibius,	40.00	35.00
CETACEA,		
Phocæna communis,	9.50	8.00
Delphinus delphis,	10.50	9.00
MARSUPIALIA.		
Didelphys virginiana,	3.25	2.50
Halmaturus thetidis,	6.00	4.50
Phascolomys ursinus,	7.25	6.00
MONOTREMATA.		
Orinthorhynchus anatinus,	11.00	10.00

Skulls of species not mentioned in the foregoing list will be supplied on order, at reasonable prices.

SERIES ILLUSTRATING HOMOLOGIES OF THE PRINCIPAL BONES OF THE SKULL,

after Prof. Frederic A. Lucas, Curator of Division of Comparative Anatomy, U. S. National Museum.

The various bones are indicated by distinctive colors, the corresponding bones being colored alike throughout the series. Cartilage and membrane bones are differentiated. Series includes the following types:

Carcharias, (Shark).
Promicrops itaira, (Grouper).

SERIES ILLUSTRATING HOMOLOGIES OF THE PRINCIPAL BONES OF THE SKULL—Continued.

Lepidosteus tristœchus, (Gar Pike).
Acipenser sturio, (Sturgeon).
Cryptobranchus alleghaniensis, (Menopoma). Model twice natural size.
Rana catesbiana, (Bull Frog). Model three times natural size.
Thalassochelys caretta, (Loggerhead Turtle).
Alligator mississippiensis, (Alligator).
Python molurus, (Python).
Spheniscus magellanicus, (Penguin). Model twice natural size.
Price, with explanatory labels, $100.

MODIFICATIONS OF FORE AND HIND LIMB.

Two Series, one consisting of arm and shoulder-girdle, the other of the hind leg of the following forms, each articulated and fully labeled.

	PRICE.
Man, (Homo sapiens)	$ 8.00
Monkey, (Ateles sp.)	5.00
Fruit Bat, (Pteropus sp.)	5.00
Mole, (Scalops or Talpa)	1.50
Horse, (Equus caballus)	9.00
Cow, (Bos taurus)	8.00
Hog, (Sus scrofa domestica)	7.00
Sheep, (Ovis aries)	5.00
Puma, (Felis concolor)	8.00
Bear, (Ursus americanus)	10.00
Dolphin, (Delphinus delphis)—no hind leg,	8.00
Woodchuck, (Arctomys monax)	2.25
Rat, (Mus decumanus)	1.25
Sloth, (Cholœpus d. or h.)	5.00
Armadillo, (Tatusia peba)	4.00
Hawk, (Buteo sp.)	2.50
Hen, (Gallus domestica)	2.00
Snapping Turtle, (Chelydra serpentina)	3.00
Iguana, (Iguana tuberculata)	3.50
Bull Frog, (Rana catesbiana)	1.50
Gar Pike, (Lepidosteus osseus)	3.00

Price of either series, $100.00,

COMPARATIVE MORPHOLOGY.

The following list includes the entire series of models illustrating comparative anatomy prepared by the late Dr. Auzoux. For scientific accuracy, elegance, exhaustive detail, and durability these preparations are unrivalled. Although their initial cost is high, the peculiar flexible papier maché of which these models are constructed, render them far more durable than any other dissecting models.

The prices quoted are for duty-free importations only. Private individuals must pay duty of 35% in addition to price quoted.

VETERINARY MODELS.

A 34 **ARAB HORSE, Complete, (Four Feet Three Inches High),** Offering in detail more than 3,000 objects, and separating into 97 pieces, showing upon one side the muscles, nerves and blood-vessels of the superficial layer, which are not removable; and upon the other side the muscles, nerves, arteries and veins, detaching one by one, as in dissection, from the superficial layer to the skeleton. In the splanchnic cavities are found all the organs contained therein, which can be removed and studied separately. This model of the horse, which leaves nothing to be desired, has been adopted by the Cavalry Corp, Veterinary and Agricultural Schools of France, and has been procured by many foreign governments, as a means of popularizing the knowledge of anatomy and physiology necessary for the amelioration of the equine race, and for the choice, employment, and preservation of the horse.
Price, duty free, $920.

A 35 **HORSE, Incomplete,**

Exhibiting upon one side the muscles, nerves, arteries and veins of the superficial layer; and on the opposite side those of the inner layer only. In the splanchnic cavities all the organs are separately removable as in complete model.
Price, duty free, $460.

A 36 **JAWS OF HORSE,**

Showing clearly the age at various epochs of life, from birth to the most advanced age, with examples of dentition of cribbiting horses, etc., set of 30 models in handsome chest.
Price, duty free, $95.

A 37 DIAGRAM OF HORSE'S TEETH,

Showing in relief their form and organization.
Price, duty free, $5.

A 38 JAWS OF OX, Showing Clearly the Age at Various Epochs of Life.

A collection of 14 models in handsome chest.
Price, duty free, $36.

A 39 LEG OF HORSE, from Eight Inches above the Hock downward, with Skin Removed.

The portion of the hock on which disease occurs is removable and can be replaced by portions of diseased bone, showing, by means of thirteen different pieces, the maladies known as spavin, curb, splint, ringbone, etc., in different stages of development.
Price, duty free, $36.

A 40 LEG OF HORSE, with Skin Removed, Showing Diseased Bone; not detachable.

Price, duty free, $12.

A 41 LEG OF HORSE, with Examples of Bony Diseases.

Price, duty free, $12.

A 42 LEG OF HORSE, in State of Health, Covered with Skin.

Price, duty free, $12.

A 43 BONES OF THE LEG OF HORSE, Composed of Twelve Different Bones,

Each bone detachable.
Price, duty free, $12.

A 44 LEG OF HORSE, Showing Diseases of Soft Tissues.

With one-half of skin removed, the other half covered by the skin, upon which are to be found examples of capped hock, wind gall, etc.
Price, duty free, $12.

A 45 FOOT OF HORSE, with Pastern, Showing the Horny Case,

Podophyllic tissue, pad of the foot, blood-vessels, nerves, etc., all removable.
Price, duty free, $16.50.

A 45a FOOT OF HORSE, Dissecting after the Manner of Bracy Clark, upon which is to be found the Charlier shoe.

Price, duty free, $19.

A 46 HOOF OF HORSE, Dissecting after Bracy Clark into wall-sole, frog, etc.

Price, duty free, $8.50.

A 46a HOOF OF HORSE, with Charlier Shoe.

Price, duty free, $8.50.

A 47 BONY PELVIS OF MARE.

Price, duty free, $12.

A 48 UTERUS OF MARE, Empty, with Internal and External Appendages,

Fallopian tubes, ovaries, etc.; capable of being fitted to pelvis No. A 47.
Price, duty free, $19.

A 49 UTERUS OF COW, with its Appendages; empty.

Price, duty free, $19.

A 50 UTERUS OF COW, with Fœtus at Four Months.

Price, duty free, $24.

MODELS ILLUSTRATING GENERAL ZOOLOGY.

A 51 TURKEY, (Meleagris gallo-pavo, Linn.), giving the Complete Anatomy of a Bird

And showing the respiratory apparatus, air sacs indicated by Prof. Sappey, etc., etc.
Price, duty free, $95.

A 52 BOA CONSTRICTOR, Seven Feet Two Inches Long,

With complete anatomy. A Type of the Reptiles.
Price, duty free, $95.

A 53 HEAD OF VIPER, Enlarged, Showing the Fangs,

Poison glands and muscles. A beautiful exposition of this formidable apparatus, which demonstrates its mechanism in every particular.
Price, duty free, $24.

A 54 SEA PERCH, (Sciœna aquila, Cuv.), 4 Feet 10 Inches Long, giving the Complete Anatomy of a Fish.

Showing muscles, nerves, arteries, veins and viscera.
Price, duty free, $144.

A 55 BEETLE, (Melolontha vulgaris), Type of an Insect in its Perfect State.

This model is enlarged to twelve times the natural size and shows the muscles, air vessels, nerves and viscera. It displays the complete anatomy of an insect, separating into as many parts as there are organs, and exhibiting in detail more than six hundred objects, which are indicated by numbers. An excellent model for illustrating the anatomy of insects.
Price, duty free, $84.

A 56 SNAIL (Helix pomatia), a Type of a Mollusc, Very Much Enlarged,

(13 inches wide, 26 inches long), with muscles, blood-vessels, nerves and viscera, separable into as many parts as there are organs, offering in detail over 600 parts, including those in the tenacles.
Price, duty free, $96.

A 57 LEECH (Hirudo medicinalis), Two Feet Long, Illustrating the Anatomy of an Annelid,

Showing the vascular, nervous digestive, locomotive and reproductive systems, according to the latest discoveries.
Price, $60.

A 58 SILK WORM (Bombyx sericaria), Two Ft. Six In. Long, a Type of an Insect in the Larval Stage. Complete Anatomy,

Showing muscles, nerves, air vessels, viscera, the entire extent of the silk-producing apparatus, including the spinneret and gland described by Dr. Auzoux as secreting a liquid which probably converts the silky matter into insoluble thread. In one of the feet can be seen the muscles exhibiting the play of the little hooks and suckers, which enable the animal to walk even with its feet uppermost.
Price, duty free, $72.

A 58b HEAD OF THE SILK WORM, Greatly Enlarged.

This model is made after the remarkable work of Prof. Blanc of Lyons' veterinary school. It shows all the internal and external details of the head including the muscles, nerves, the termination of the silk producing apparatus, the spinneret and Auzoux' glands, it enables one to follow the course of the silky liquid and its transformation into thread and to understand the wonderful work of the silk worm.
Price, duty free, $24.

A 59 BUTTERFLIES OF THE SILK WORM, Male and Female Greatly Enlarged.

Upon each specimen is shown the atrophy of the digestive

tube and development of the reproductive organs.
Price, each, $30; both, $60.

A 60 BEE (Apis mellifica), 3¼ Inches Long; Six Forms:

Queen, Drone, Waxmaker, Honey-bee, Worker with Propolis and with Pollen—on each of which are shown the external and internal characteristics which distinguish each type. The comb also is present in the same proportion, showing the cells for the honey, for the pollen, for the eggs of queens, for the drones, and for the workers, together with the eggs, larvæ and pupæ at different stages of incubation.
Price, duty free, $72.

COMPARATIVE ANATOMY OF THE ORGANS.

A 61 This collection is designed to illustrate the principal functions of life in the entire animal kingdom, from man to the star-fish, and to make appreciable the variations which the organs present in their structure and in their functions. Dr. Auzoux has executed (either in natural size, or greatly enlarged as the case required) the organs of digestion and of respiration, and the circulatory and nervous systems, in the

MAMMALS,	FISHES,	ARACHNIDÆ,
BIRDS,	INSECTS,	ECHINODERMS,
REPTILES,	MOLLUSCS,	CRUSTACEANS.

To the Professor of Biology or Anatomy, we recommend this series as of an importance entirely beyond its cost.

Price of complete collection, duty free, $312.

This collection embraces the following models, comprising Nos. 62, 63, 64 and 65, which may be procured as independent collections or as individual models.

INDIVIDUAL PIECES OF SERIES No. 61.

A 62 DIGESTION.

	PRICE. DUTY FREE.
Stomach of Lion,	$ 7.25
" " Ruminant,	19.25
" " Horse,	8.50
" " Rodent,	7.25
" " Gramnivorous Bird,	7.25
" " Bird of Prey, (Owl)	2.50
" " and Intestinal Tube of Shark,	7.25
" " " " Prawn,	7.25
" " of Squid,	7.25
" " " Grasshopper,	7.25
" " " Bee,	4.75

		PRICE. DUTY FREE.
A 63	**CIRCULATION.**	
	Heart of Human Fœtus, (size of adult)	$12.00
	" and Blood-vessels of Crocodile,	9.65
	" " " " " Serpent,	7.25
	" " " " " Tortoise,	9.65
	" " " " " Dugong,	9.65
	" " Gills of Carp,	9.65
	" " Blood-vessels of Oyster,	5.00
	" " " " " Doris,	7.25
	" " " " " Cuttle-fish,	7.25
	" " " " Fresh-water Mussel,	6.00
A 64	**NERVOUS SYSTEM.**	
	Cerebrum, Cerebellum and Spinal Cord of Man,	48.60
	Cerebrum of Cat, (enlarged)	12.00
	" " Rat, "	7.25
	" " Goose, "	7.25
	" " Viper, "	7.25
	" " Tortoise, "	7.25
	" " Carp, "	7.25
	" " Ray, "	7.25
	Nervous System of Molluscs,	1.25
	" " " Echinoderms,	1.25
	" " " Arachnidæ,	1.25
	" " " Prawn,	1.25
	" " " Insecta (larva, chrysalis, insect)	3.75
A 65	**RESPIRATION.**	
	Larynx, Trachea, Lungs and Air Sacs of Bird,	14.50
	Lungs and Vocal Chords of Frog, (enlarged)	9.60
	Spiracles, Air Sacs and Heart of Nepa, (enlarged)	9.60
	MODELS OF SKULLS AND BRAINS.	
A 66	Head of Young Gorilla, { Brain, $ 7.25 / Skull, without bony crests, 12.00 }	19.25
A 66a	Head of Adult Gorilla { Brain, 7.25 / Skull with commencement of crests, 12.00 }	19.25
A 67	Head of Old Gorilla { Brain, 7.25 / Skull, with large crests, 12.00 }	19.25
A 68	Head of Very Old Female Gorilla, { Brain, 7.25 / Skull, without crests, 12.00 }	19.25
A 69	Brain of Chimpanzee, 7.25	7.25
A 70	Head of Orang-Utan { Brain, 7.25 / Skull, 12.00 }	19.25
A 71	Head of Gibbon { Brain, 7.25 / Skull, 12.00 }	19.25
A 72	Brain of Seal, 7.25	7.25
A 73	Head of Lion { Brain, 7.25 / Skull, 12.00 }	19.25

MODELS OF SKULLS AND BRAINS—Continued.

			Price. Duty Free.
A 74	Brain of Panther,		$ 7.25
A 75	Brain of Bear,		7.25
A 76	Brain of Wolf,		7.25
A 77	Brain of Horse,		14.50
A 78	Skull of Elephant, separable into two portions, with jaws and tusks, showing the numerus cells which limit the cerebral cavity,		72.00
A 78a	Brain of Elephant, dissected to show the interior structure, and fitting the cavity of the preceding skull,		24.00
A 79	Head of Kangaroo, with skin removed	Brain, $ 4.80 Skull, 4.80	9.60
A 80	Head of Capybara, with the masticator muscles,	Brain, 7.25 Skull, 12.00	19.25
A 81	Head of Crocodile, covered with the skin,	Brain, 3.75 Skull, 8.40	12.00

DIRECTIONS.

FOR DISSECTING THE AUZOUX MODELS.

A complete description accompanies each model.

A number accompanied by sign ☞ indicates that the piece upon which it is fixed is capable of being detached; the smaller numbers or letters point out the details.

As a rule each piece is kept in place by a straight pin and a curved one, each end being furnished with one.

The ordinal number is always put upon the extremity corresponding to the curved pin. It serves to indicate:—

FIRST. The Order in which the pieces are to be removed.

SECOND. The Point at which to commence the removal of the piece.

TO REMOVE A PIECE,

Simply slip the spatula below the number, draw the organ or section toward you in order to loosen the curved pin, and raise or lower it to loosen the straight one.

TO REPLACE,

It is first necessary to arrange the pieces in the order of their numbers; then proceed to replace them by commencing with the highest number, continuing thus to No. 1.

A number corresponding to that of the piece is to be found near the hole into which the curved pin fits.

THESE RULES render the dissection of the most complicated preparation a sure and simple proceeding.

IN ADDITION

To the models illustrating Comparative Anatomy herein described, there are a large number of desirable Botanical and Zoölogical models which have been omitted from lack of space.

To those contemplating the purchase of preparations of the latter class, descriptions and illustrations of models for the demonstration of either the complete anatomy, the development, or the anatomy of particular organs of any desired type, will be forwarded on request.

CHARLES H. WARD,

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